ENGINEERING NEWS-RECORD

Hangars for the biggest planes *p. 34*

★

★

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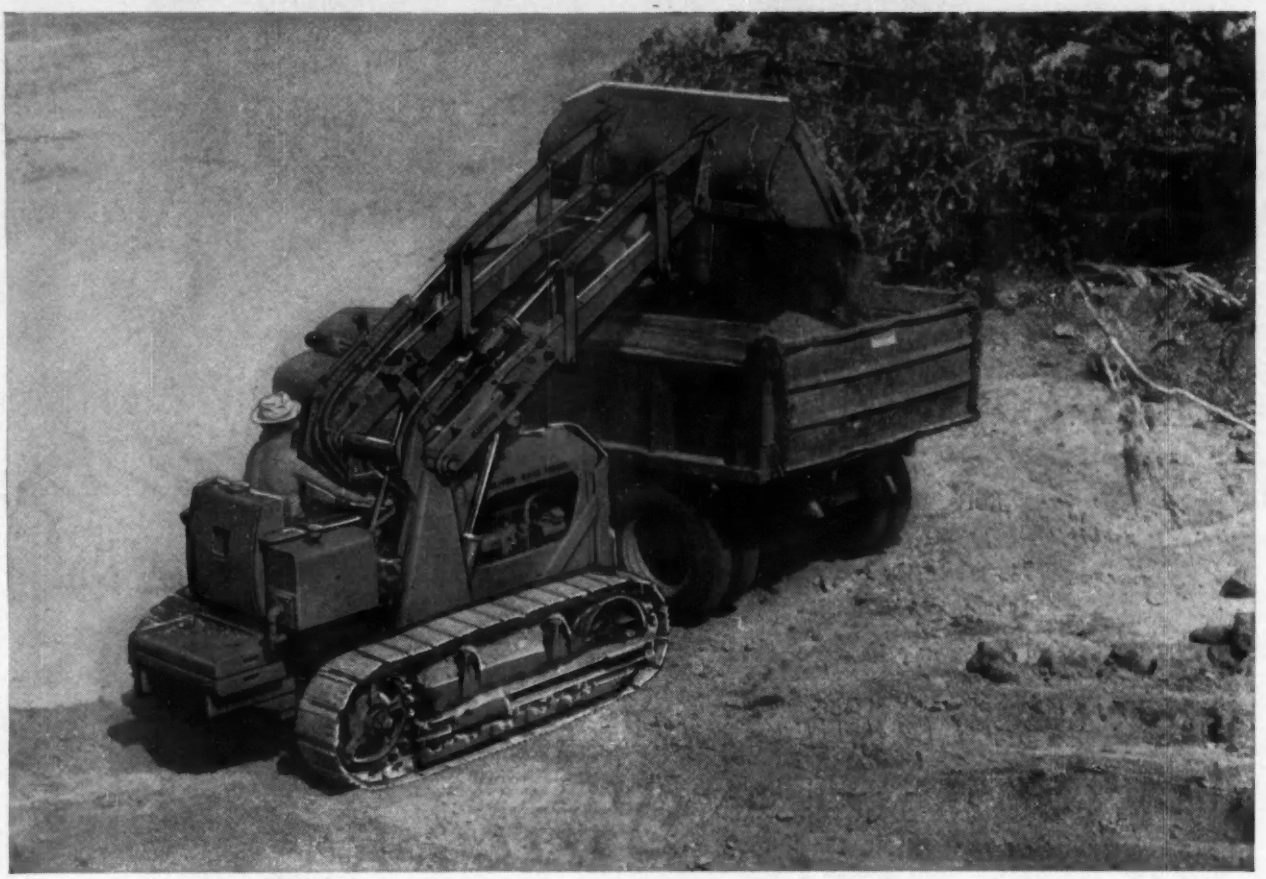

MOST POWERFUL IN ITS CLASS:

OLIVER OC-12 with 53 d.b.h.p.

53 d.b.h.p. really pays off behind this rugged dozer blade. Its front-mounted cylinders and pump provide extremely accurate control with powerful down pressure for hard, heavy soils. Angle blade also available.

Now it's official—the OC-12 tops them all!

It develops 53 d.b.h.p. with an engine having exceptional torque characteristics that provide extra lugging ability under heavy loads. There's more push or pull in every gear...less shifting...bigger loads every time. Diesel or gas models available. Both with the same high h.p. and outstanding economy record.

A safe, simple-to-operate crawler, the OC-12 has wide, comfortable platform, finger-tip controls, and easy steering with two-track power.

OC-12 attachments outperform the rest, too. This loader, for example, has a bucket with more rollback. It fills faster, levels at any height to carry bigger loads with less spilling. It's a balanced unit with stability . . . clearance . . . long reach...10′4″(124″) lift. Regular bucket is 1¼-yd. size. Two and one-quarter yd. available for light materials. See your Oliver Distributor for complete information. Let him show you the OC-12 in action.

THE OLIVER CORPORATION
400 West Madison Street, Chicago 6, Illinois

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a complete line of industrial wheel and crawler tractors

Wire Rope at Work—This is part of the steelwork for a brand-new building on New York's East Side. It will be a beautiful multicolored structure topped by a striking blue tower. When completed, the building is to be known as 711 Third Avenue. "711" will usher in an era. It is expected to pioneer an exciting period of new construction on Third Avenue—a development forecast by the razing of the elevated railway.

As the steelwork for 711 went up, Bethlehem wire rope was much in evidence. You see some of it in the photograph: that hoist line, for instance, descending from the derrick boom. The rope was Purple Strand, of course, Bethlehem's toughest grade, and it handled those heavy structural members as if they were straws. A typical assignment for Purple Strand, one duplicated many times a year in every part of the country.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

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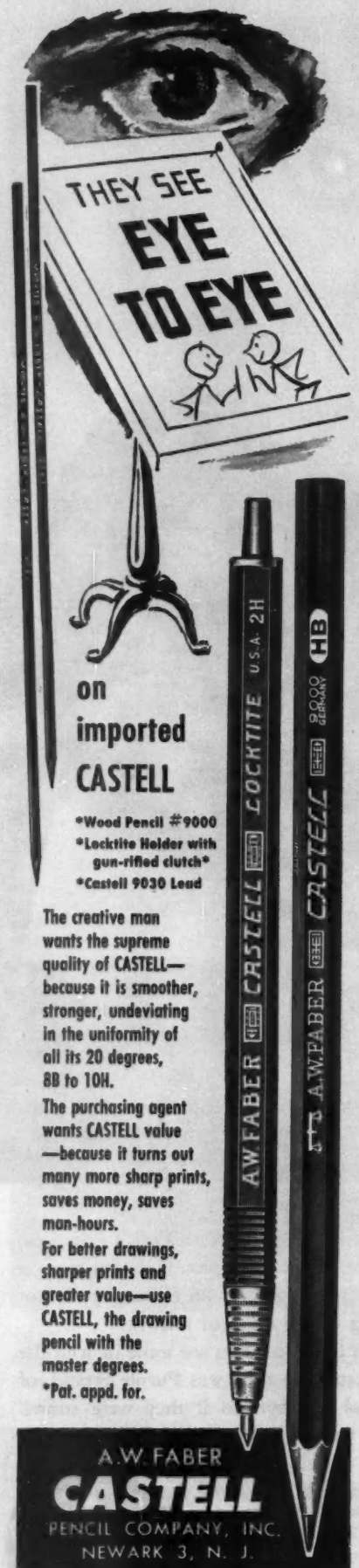

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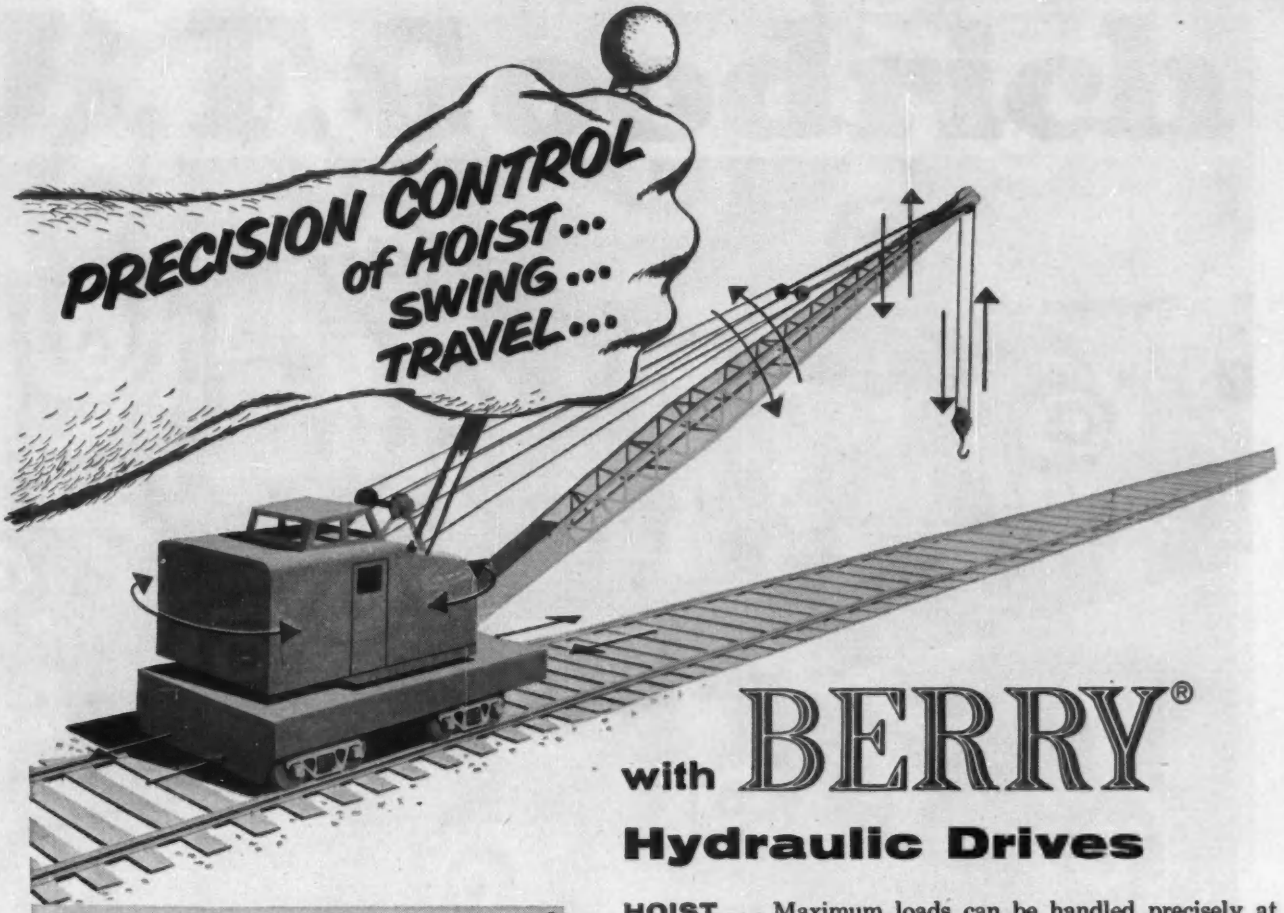

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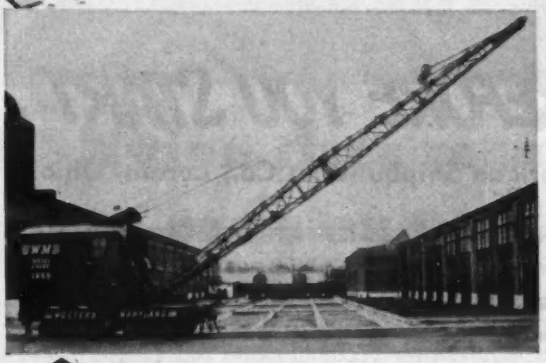
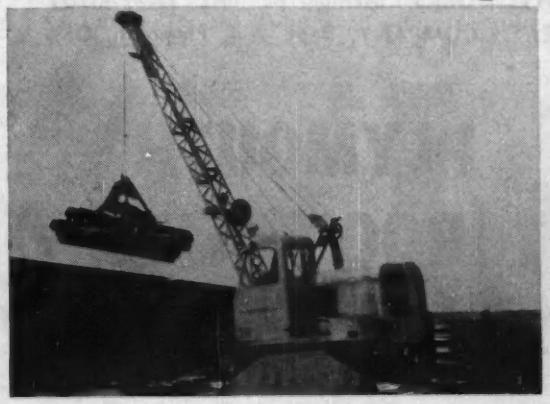


17½-Ton Brownhoist with Boom, Hoist and Travel supplied by a BERRY Drive for Western Maryland Railway Company.

10-Ton Unit Crane provided with Independent Swing by use of a BERRY Drive for The Milwaukee Road.



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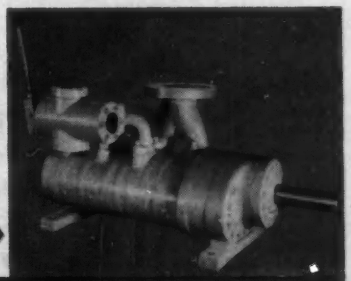

BERRY Model 32-10 3-place pump with BERRY Selector Valve mounted.

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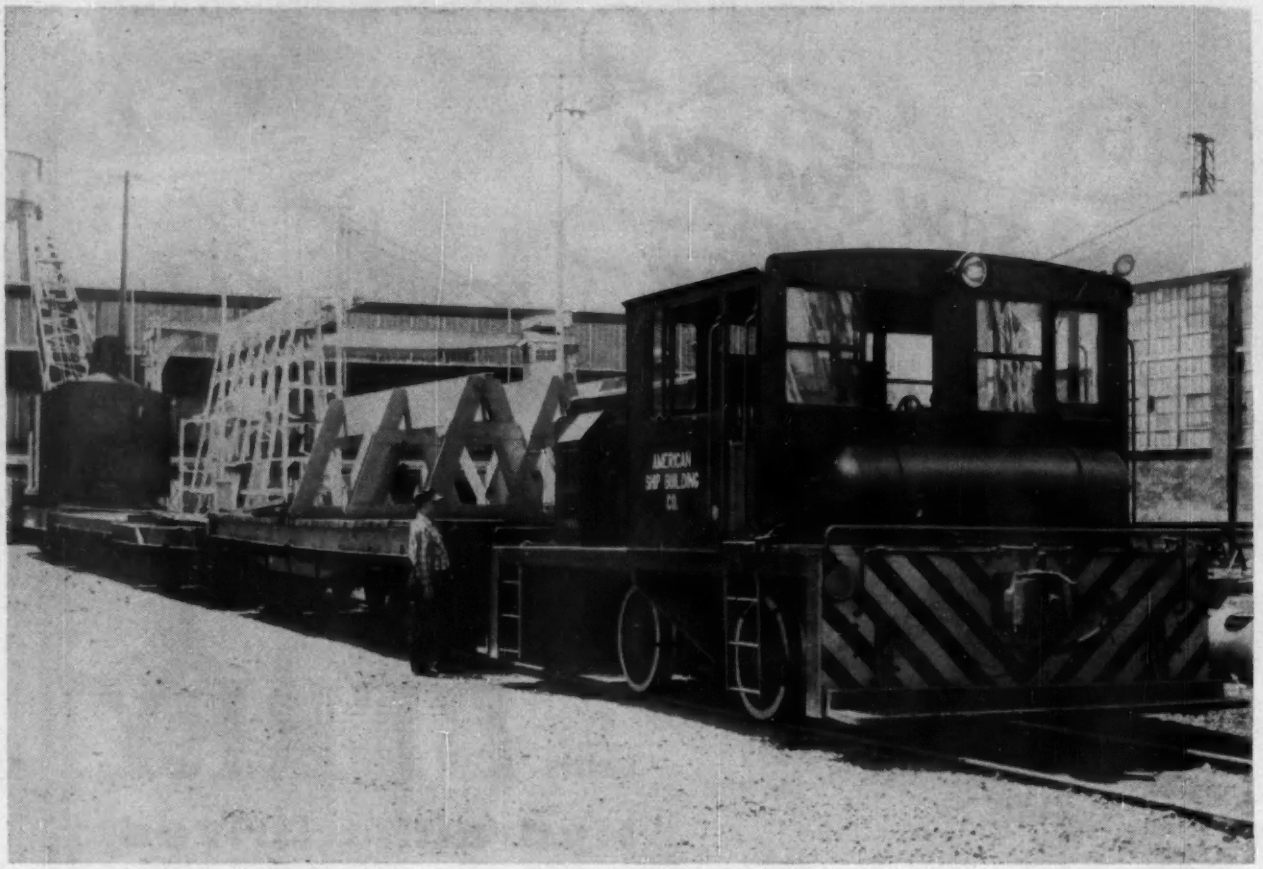

Shipbuilders learn a Plymouth lesson . . .

HOW TO SAVE TIME BEFORE YOU START

at American Shipbuilding Co., Lorain, Ohio

"Even before we moved a bit of material, our Plymouth Model MDT Diesel showed us how to save," says Mr. Gordon Stafford, Manager of the Lorain yards. "We made considerable savings just by cutting out the time we formerly needed to stoke up our steam locomotive and build up sufficient steam pressure.

"Right down the line, Plymouth pays its way in savings and better performance. Big things like better fuel efficiency, less down-time and maintenance costs and those little extras like eliminating the smoke nuisance in our neighborhood are just part of the story. Plymouth's dependability for day-after-day performance has helped us meet tight production schedules familiar to every shipbuilder."

The lesson here is to learn what Plymouth's dependable, cost-cutting performance can do on your job. Start by sending a brief outline of your operating needs for an expert analysis by Plymouth engineers . . . no obligation on your part, of course. Models to meet your needs from 3 to 70 tons. Gasoline or Diesel, mechanical or Torqomotive Drive.* Send outline to: PLYMOUTH LOCOMOTIVE WORKS, Division of THE FATE-ROOT-HEATH COMPANY, Dept. A-4, Plymouth, Ohio.

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B.F.Goodrich

All-Nylon tires recapped again and again, cut costs one-half, contractor reports

S. J. GROVES AND SONS CO., builds roads all over North and South America. Equipment used by this Minneapolis, Minn., contractor includes tractor graders and scrapers, oil and sprinkler trucks, low-boys and trailers, dump trucks and compactors.

To keep tire costs at a minimum, this company uses B. F. Goodrich *all-nylon* tires. On the Indiana Turnpike, the project engineer reports: an average life of over 4,000 hours, sometimes as many as 5 recaps. No wonder Groves finds B. F. Goodrich tires cut costs one-half!

Nylon can lower your tire costs, too

Nylon is stronger than ordinary cord materials. It withstands double the impact, resists heat blowouts and flex breaks. That's why the B. F. Goodrich *all-nylon* tire body outwears even its extra-thick tread, *can be recapped again and again!* You get more original hours of service, more hours of service per recap. You save money on tires!

B. F. Goodrich makes a complete line of *all-nylon* tires for every off-the-road job. See your B. F. Goodrich retailer today and find out how you can cut tire costs to a minimum. His address is listed under Tires in the Yellow Pages of your phone book. Or write *The B. F. Goodrich Co., Tire & Equipment Division, Akron 18, Ohio.*

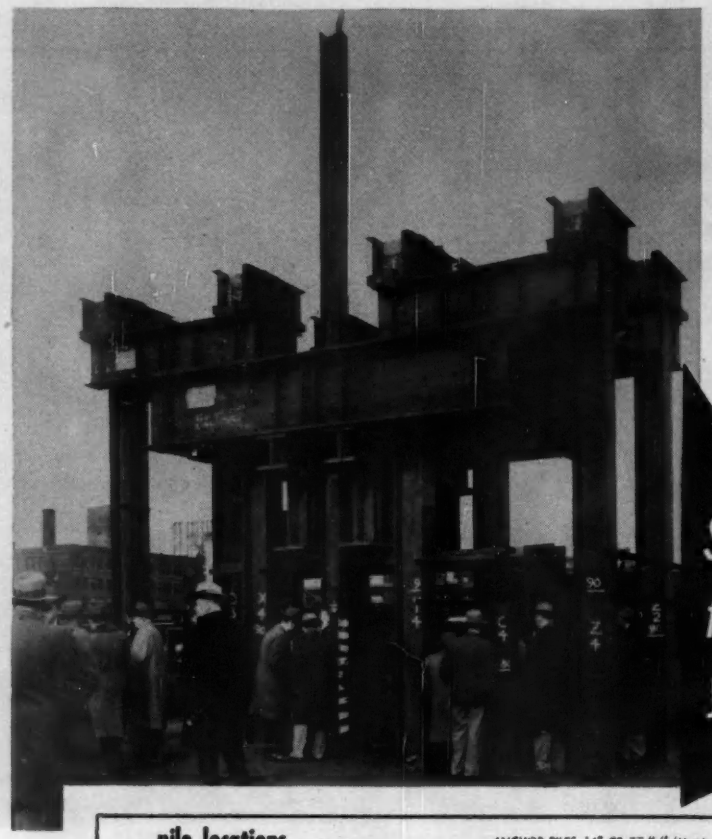
THESE RECAPPED B. F. Goodrich *all-nylon* Rock Logger tires (rear) work 20 hours a day, 6 days a week the year 'round.

S. J. GROVES uses 7 kinds of B. F. Goodrich tires on the Indiana Turnpike project, including the Super Traction tires shown above.

Specify B. F. Goodrich tires when ordering new equipment

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

Chicago tests prove USS Steel



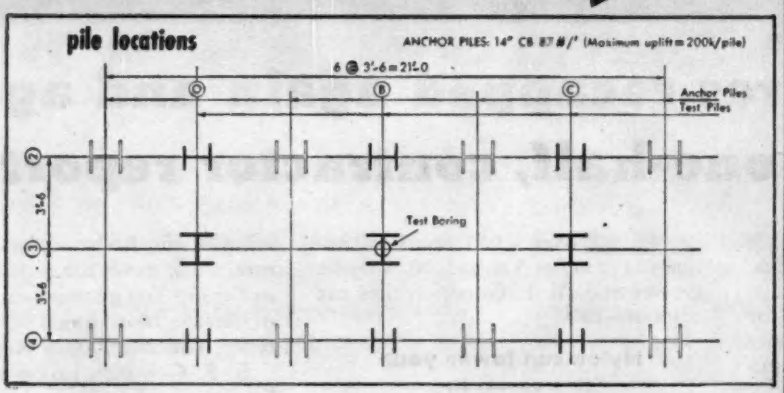
See for yourself

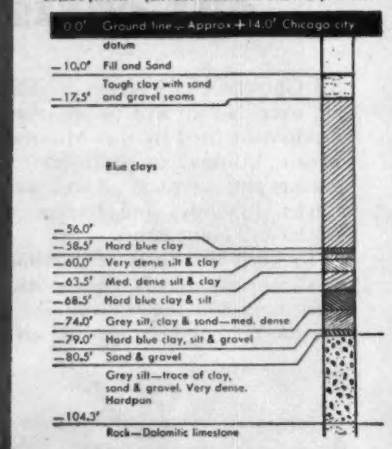
To provide authentic data showing USS steel H-beam piles capable of meeting limits allowed by the City of Chicago Building Code, United States Steel Corporation had the Armour Research Foundation of Illinois Institute of Technology conduct tests on a site having soil conditions typical of the Loop area. Tests were made at the corner of Harrison and Halstead Streets. A total of 17 piles were driven, eight of which were used as anchor piles. Data on the nine test piles is shown in the table below.

USS Steel H-Beam Bearing Pile Test

Pile Number	
Pile Size	
End Conditions	
Proposed Allowable Load—Tons	
Test Load—Tons	
No. of Blows in Last Inch	
Estimated Design Load by ENR Formula‡	
Total Deflection at Proposed Allowable Load	
Total Deflection at Test Load	
Rebound from Test Load	
Total Net Settlement	
Allowable Total Net Settlement by Chicago Code	
Load at Failure—Tons	
Avg. Unit Stress (fs) at Failure—psi	
Total Deflection at Failure	
Rebound from Failure Load	
Net Settlement after Removal of Failure Load	
Manner of Failure	

**Final driving of all piles by Vulcan type OR hammer—30,225 ft. lbs. ‡ENGINEERING NEWS formula.*




0.0' Ground line—Approx +14.0' Chicago city datum
-10.0' Fill and Sand
-17.5' Tough clay with sand and gravel seams
Blue clays
-56.0'
-58.5' Hard blue clay
-60.0' Very dense silt & clay
-63.5' Med. dense silt & clay
-68.5' Hard blue clay & silt
-74.0' Grey silt, clay & sand—med. dense
-79.0' Hard blue clay, silt & gravel
-80.5' Sand & gravel
Grey silt—trace of clay, sand & gravel. Very dense. Hardpan
-104.3'
Rock—Dolomitic limestone

THEIR NATURAL ADVANTAGES *make* USS STEEL H-BEAM BEARING PILES *the logical foundation for heavy, multi-story buildings*

The design possibilities, low cost, and ease of installation of USS steel H-Beam bearing piles offer definite advantages over foundation caissons for supporting heavy buildings. Buildings of any height can be founded on steel H-Beam piles without limitations resulting from insufficient penetration. Excessive amounts of free water, marsh gas, and other adverse conditions which sometimes halt construction of open-pit caissons, offer no obstacles to obtaining required design loads with steel H-beam bearing piles. Furthermore, the cost in time, materials, and equipment needed to construct open-pit caissons makes USS steel H-Beam Bearing Piles the most economical type of foundation you can use.

SEE THE UNITED STATES STEEL HOUR. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

high load-carrying capacity of H-Beam Bearing Piles

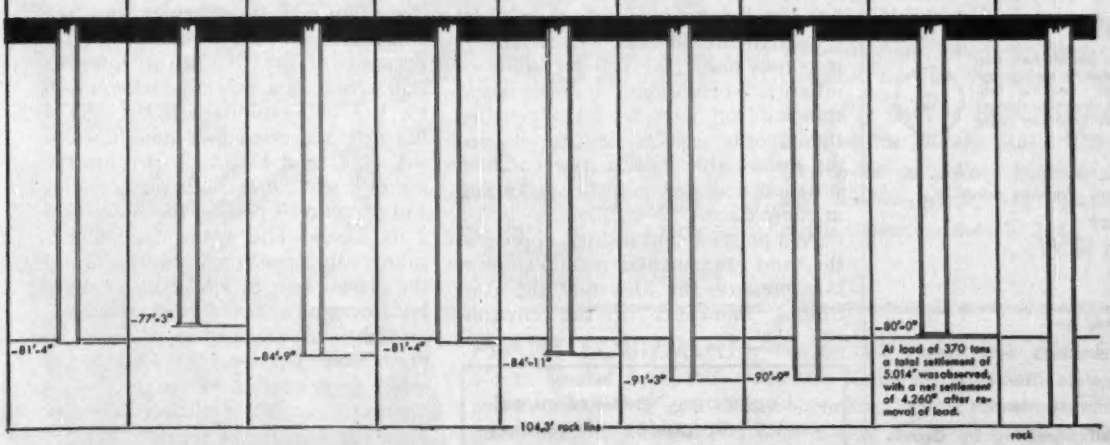
All of the nine piles tested exceeded the requirements of the Chicago Building Code, except for the closed end, 14-inch H-beam bearing pile that failed by excessive net settlement at a load of 370 tons. This pile was not driven to hardpan inasmuch as the desired driving resistance was attained before hardpan was reached. Therefore, it seems logical to assume that for loads of the magnitude of those under discussion, firm seating in hard soil should be a requirement.

Here again is proof that USS Steel H-Beam Bearing Piles are capable of carrying heavy foundation loads into stable mediums lying at great depth. Their capacity for high unit loads, both vertical and horizontal, permits fewer piles and fewer driving operations for a given load. They are readily handled in the field by ordinary equipment, are easy to splice, eliminate jetting, and withstand rough handling.

If you would like to receive detailed information regarding your particular foundation problems, please contact the office nearest you.

Data* (In accordance with Chicago Code requirements—in addition B4, B2 and B3 were tested to failure.)

O4	C4	B4	O2	C2	B2	O3	C3	B3
10" CBP 42#/'	10" CBP 42#/'	10" CBP 42#/'	12" CBP 53#/'	12" CBP 53#/'	12" CBP 53#/'	14" CBP 117#/'	14" CBP 117#/'	14" CBP 117#/'
Open	Closed	Open	Open	Closed	Open	Open	Closed	Open
75	75	75	100	100	100	200	200	200
150	150	150	200	200	200	400	400	400
10	10	31	7	7	Refusal	22	24	On Rock
151	151	228	124	124	.....	208	213	.....
0.317"	0.312"	0.168"	0.359"	0.338"	0.270"	0.378"	0.454"	0.293"
0.773"	0.976"	0.501"	2.147"	1.321"	0.637"	0.891"		0.695"
0.633"	0.730"	0.549"	0.754"	0.810"	0.670"	0.723"	See Below	0.657"
0.140"	0.246"	—0.048"	1.393"	0.511"	—0.033"	0.168"		0.038"
1.50"	1.50"	1.50"	2.00"	2.00"	2.00"	4.00"	4.00"	4.00"
		240			300			635
		34400 psi			38500 psi			36900 psi
		0.985"			1.079"			2.669"
		0.831"			0.932"			1.176"
		0.154"			0.147"			1.493"
		Local Flange Buckling Above Ground			Local Flange Buckling Above Ground			Yielding Over Cross Section of Pile



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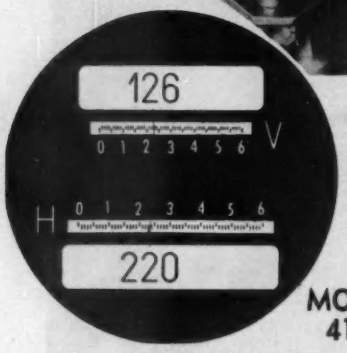

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READERS COMMENT

Environment and Soil Tests

SIR: A few ideas and conceptions summarized from my paper "Judgment and Environment Factors in Soil Testing" as presented at the ASTM annual meeting, may be of interest to the readers of your editorial "Optional Methods of Soil Testing," (ENR July 14, 1955, p. 120). As a first fundamental conception, the characteristic responses of soils are pre-determined and governed by the dominating influences of the natural environment. The responses vary with the character of the soils and with seasonal temperature and moisture conditions. The new conditions imposed by the treatment of soils, construction of structures, and service conditions produce important changes in environment. Inevitable changes in soil responses then follow, which may be either beneficial or detrimental.

As a second fundamental conception, soil tests should properly reflect environmental influences. In contrast to the usual acceptance tests for uniform structural materials, which are practically unaffected by such influences, soil tests are made to disclose and to bracket the unknown character and responses of soils. If the test conditions are not representative, then the measured responses of soils are certain to be modified accordingly, but in an unknown manner and degree. Unfortunately, the results of routine standard soil tests, using a single, relatively arbitrary, average test procedure can not usually be translated into reliable predictions of responses under the real prevailing or imposed conditions. The single standard soil tests tends to penalize the favorite aspects and to obscure the unfavorable aspects inherent in a situation, and may even be misleading in some cases.

As a practical and realistic approach, the third fundamental general conception presents the idea that the controlling influences of the environmental and imposed service conditions can be determined reliably and adequately only by soil tests, which are representative of and essentially reproduce these conditions. While their scope, character, and influences may vary quite widely in different regions of the United States, they may be definitely identified and established in local areas of experience and practice. Appropriate modifications of test conditions can accordingly be used in each region.

The compaction test, which has become one of the most useful and important soil tests for highway, airport and earth dam construction, is a controlled environment test to establish the moisture-density relations, and to provide criteria for design and compaction control. To meet more severe traffic conditions, it was necessary to raise the compactive effort to the Modified A.A.S.H.O. Standard. The lower compactive effort, however, still fills a definite need, where it is adequate for the conditions, thus permitting economies in construction to be realized.

Further improvements in the test can be achieved by making the test conditions and hence the test results more representative of the soil materials—gravel, sand, silt and clay soils —and of field conditions. Under the single standard test using the material passing the No. 4 sieve, but where the gravel content exceeds about 35 percent, the test data cannot be translated readily into reliable criteria of maximum density, optimum moisture and strength of the whole soil for purposes of field control of compaction. As a step forward, Subcommittee R-3 of Committee D-18, ASTM has now suggested four modifications —A, B, C and D, which permits the use of 4 in. and 6 in. diameter molds and of material passing the No. 4 and ¾ in. sieves. The appropriate modification can be selected, depending on the gravel content, after the soils have been examined in the laboratory.

Additional modifications should be given consideration: (1) the use of moist soils, instead of air-dried soils to insure proper hydration of clay soils; (2) the use of separate batches of soil for each moisture-density point, instead of the re-use of a single batch, in order to avoid objectionable effects of reworking on test densities and strength of clay soils; and (3) the use of temperature control of compaction, instead of room temperatures, in order to insure conditions representa-

(*Continued on page 10*)

Engineering News-Record welcomes expressions of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

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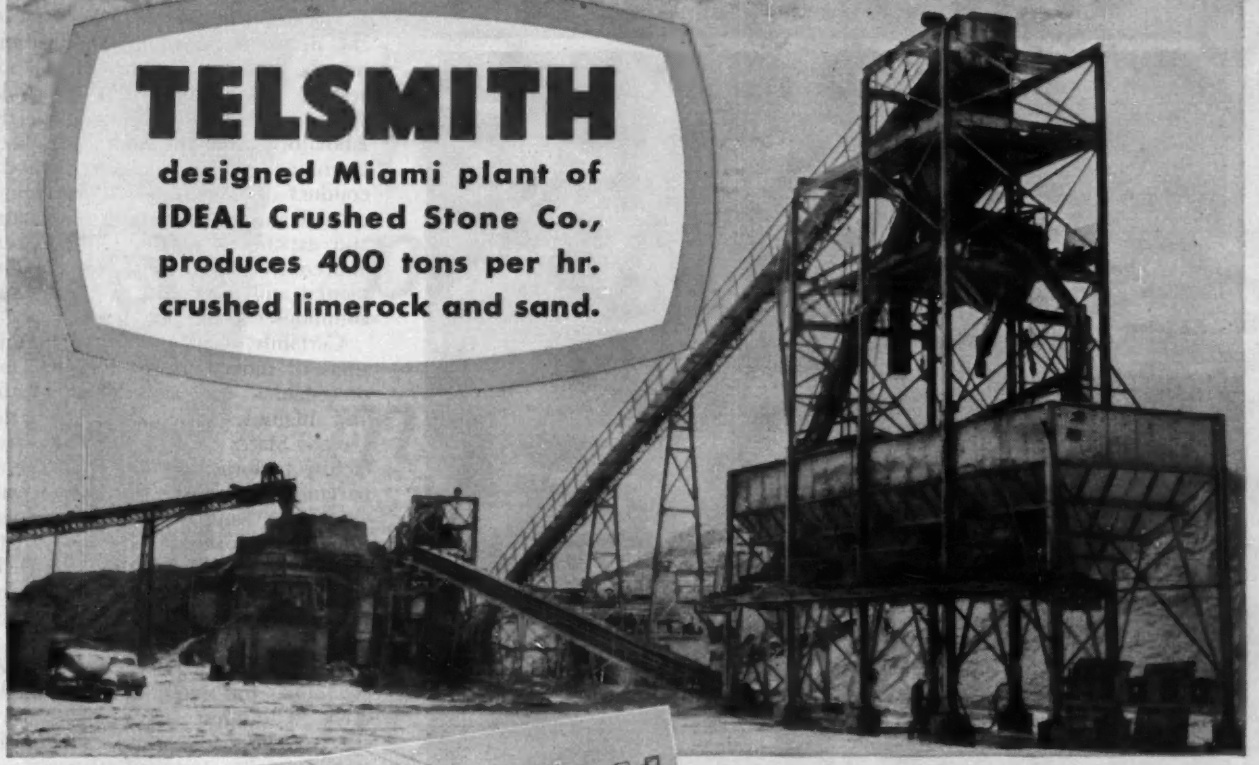

Telsmith 30" x 25' Twin Screw Sand Classifier.

•

Telsmith 5' x 12' double deck special heavy-duty Vibro-King Screen.

● With a capacity of over 400 tons per hr; 60% rock, 40% sand; this Telsmith-designed plant makes 6 sizes: ¾" to 2½" ballast; 1"-¾", ¾"-½", ½"-⅜", ⅜"-3/16" rock; 3/16" sand. A 4½-yd. dragline digs the raw material; self-dumping barges transport it to plant.

● Ballast goes to railroads. Aggregate qualifies for Florida State, County, and City specs; U. S. Army Engineers; ready-mix, concrete-block, and concrete pipe plants. Send for Bulletin 266.

Q-32

PLANT EQUIPMENT—Two 60" x 8' Heavy Duty Plate Feeders • 5' x 12' Special Heavy Duty Vibro-King Scalper ahead of 30" x 50" single roll primary crusher • 5' x 12' 2-deck Vibro-King Scalper ahead of reversible impactor secondary crusher • 5' x 12' 2-deck and 5' x 14' 3-deck Vibro-King Finishing Screens for rock sizing • 2' x 8' 1-deck Vibro-King Screen for fine sand • 30" x 25' Twin Screw Sand Classifier for coarse sand • 24" x 20' Single Screw Sand Classifier for fine sand • All Telsmith except crushers.

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YOUR BEST BET FOR PUSH-PULL VENTILATION

In underground construction, Naylor offers the most practical push-pull ventilating service.

The combination of light-weight Naylor Spiralweld pipe and the Naylor low pressure Wedge-Lock coupling provides a system with these outstanding performance advantages.

Lines can be made up quickly — faster than by any other method. The coupling provides remarkable accessibility. Space on only one side of the pipe is required for connection. The compact design of this coupling method permits the line to hug the walls in tunnels or wherever space is limited. With each joint of pipe the same length, it is a simple matter to replace any section at any time.

For the complete story, ask for Bulletins No. 507 and No. 514.

NAYLOR PIPE

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Eastern U. S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

READER COMMENT

tive of the prevailing field temperatures from early spring, summer, to late fall, and thus adequately to take into account the important influences of temperature on the criteria for field control of compaction. Some of the decisions regarding modifications may be made in advance through soil testing specifications, but other decisions will have to be made in the laboratory after the soils have been examined. These decisions and the conduct of such tests require technical skill and understanding, knowledge and experience regarding the nature and controlling influences of environmental and imposed conditions, and commonsense and judgment.

Certainly, in view of the enormous sums of money involved in the unprecedented expansion of expressway and highway systems all over the United States, and of the fully satisfactory performances and long life of pavements at stake, the best talent, experience, and know-how of expert soil engineers should be employed to solve and to handle the inherently complex and difficult soil problems involved. The principal objectives should be consistently to achieve a high standard of excellence, greater economy, and more enduring highways. The most important forward step in the realization of these objectives is: "to test and to treat real soils under the influences of essentially real conditions".

DONALD M. BURMISTER
Professor of Civil Engineering
Columbia University
New York, N. Y.

CALENDAR

Associated General Contractors, Carolinas Branch, annual convention, Bon Air Hotel, Augusta, Ga., Oct. 30-Nov. 2.

American Concrete Institute, Southeast regional meeting, Atlanta Biltmore Hotel, Atlanta, Ga., Oct. 31-Nov. 1.

Structural Clay Products Institute, convention, Greenbrier Hotel, White Sulphur Springs, W. Va., Oct. 31-Nov. 2.

Wire Reinforcement Institute, Ambassador Hotel, Chicago, Ill., Oct. 31-Nov. 2.

American Concrete Pipe Association, short course school of instruction, Chase Hotel, St. Louis, Mo., Nov. 14-16.

Nuclear Engineering and Science Congress, sponsored by the Engineers Joint Council, Public Auditorium, Cleveland, O., Dec. 12-16.

HERE'S

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more versatility

more dependability

than you've ever seen in a 45-drawbar-hp tractor!

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FOR SUSTAINED HIGH OUTPUT!

more versatility . . .
FOR A WIDER RANGE OF WORK!

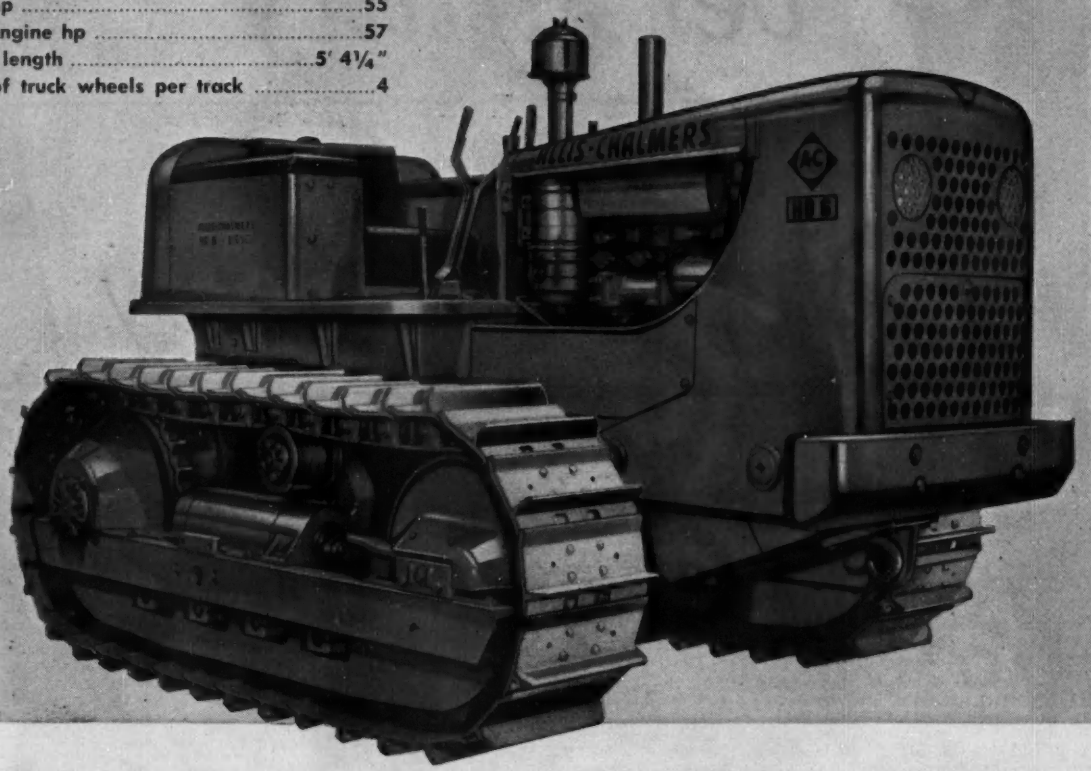
more dependability . . .
FOR LOWER JOB COSTS!

TWO NEW

HD-6

BULLDOZER-DRAWBAR TRACTOR
. . . an all-round tractor balanced for outstanding performance with both mounted and drawn equipment.

Weight	12,400
Drawbar hp	45
Belt hp	55
Net engine hp	57
Track length	5' 4¼"
No. of truck wheels per track	4



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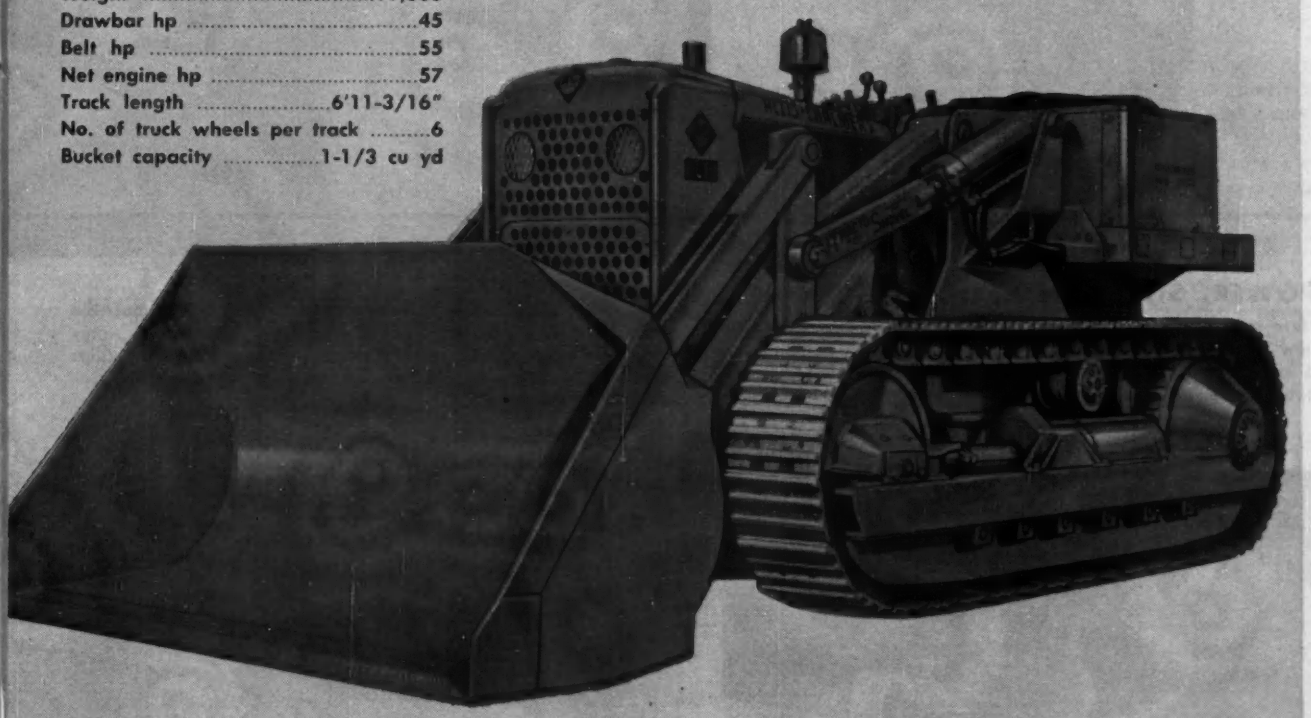
tested and proved over millions of operating hours!

ALLIS-CHALMERS ANNOUNCES HD-6 SERIES TRACTORS

HD-6G

TRACTOR SHOVEL
. . . with the shovel a "built-in" part of the tractor — not just an attachment.

Weight	19,600
Drawbar hp	45
Belt hp	55
Net engine hp	57
Track length	6'11-3/16"
No. of truck wheels per track	6
Bucket capacity	1-1/3 cu yd

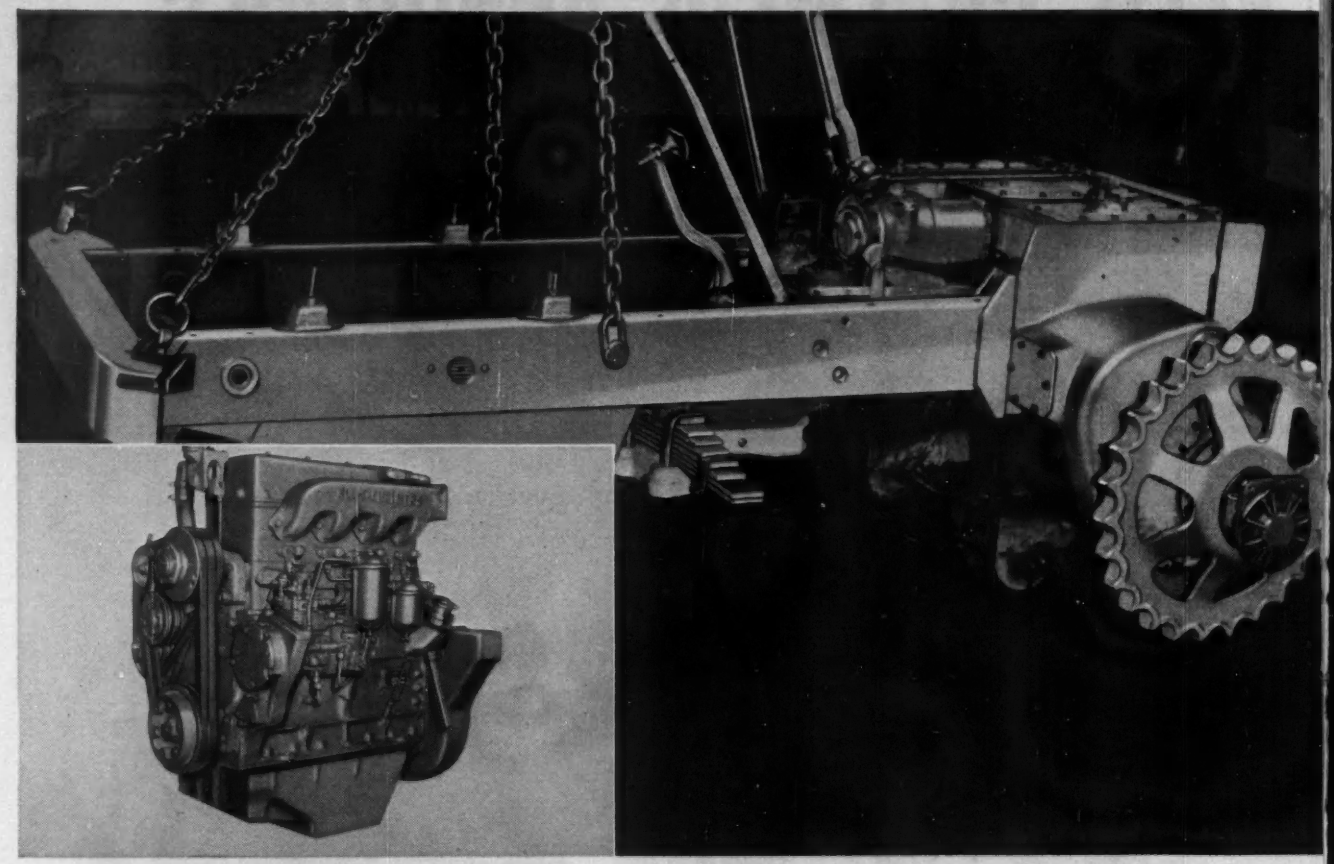


The HD-6 series represents the most advanced engineering in the tractor business — not just in features, but in *basic design.* That means plenty of power, balance throughout the tractor, strength in *all* components, weight in the *working* parts where it does the most good, and big safety factors. It also means engineering for the use of mounted equipment, and for easier, better operation and maintenance.

Following are just a few of the many features that reflect this advanced basic design . . . help to bring you higher production, more work done . . . lower job costs.

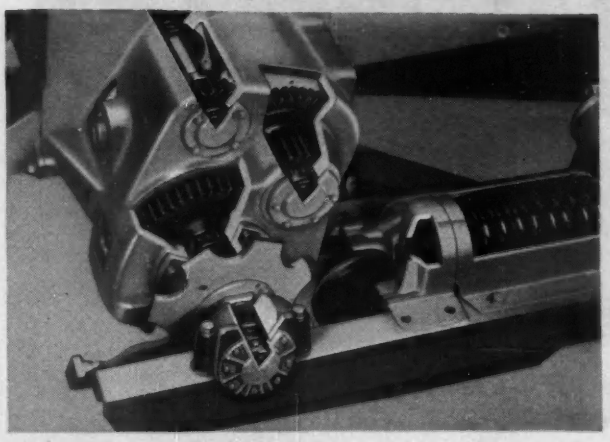
Inside Facts on

NEW ALLIS-CHALMERS HD-6 SERIES TRACTORS



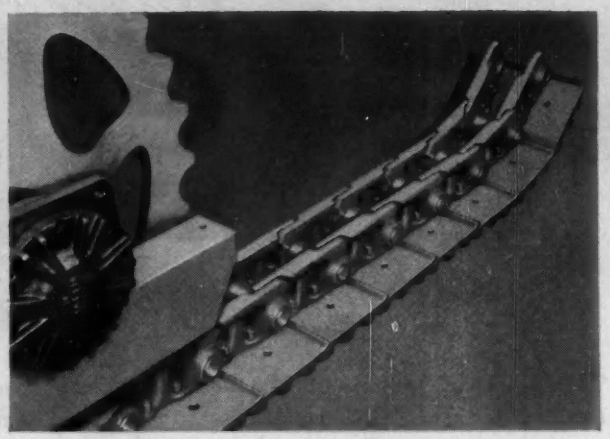
POWER, STRENGTH AND PROTECTION

Here are two important features of the HD-6 series. First, the new Allis-Chalmers diesel, with follow-through combustion — a sure bet for top performance, long life, low upkeep costs. Second, the exclusive all-steel box-A main frame. It protects the entire power train from shock loads, makes possible superior over-all balance, better equipment mounting . . . plus the service simplicity of unit construction. Major assemblies like engine and clutches can be easily removed without disturbing adjacent parts.



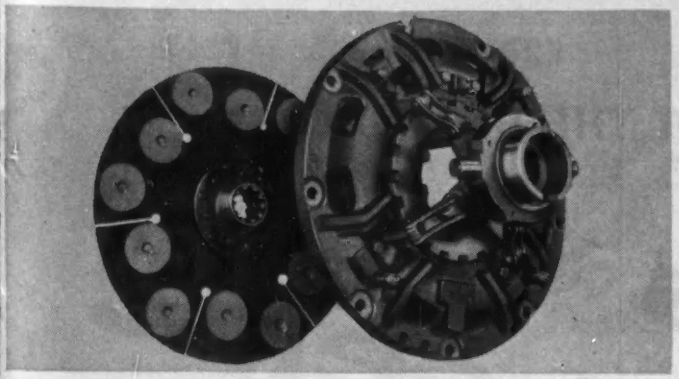
STRADDLE-MOUNTED FINAL DRIVE GEARS

Tapered roller bearings support both ends of the final drive gear shafts. With smaller gears and shorter shafts (plus line-bored, one-piece case), that means better bearing and gear alignment, more strength, longer life . . . even with the big load requirements of today's mounted equipment. And *double-reduction* final drives provide greater ground clearance.

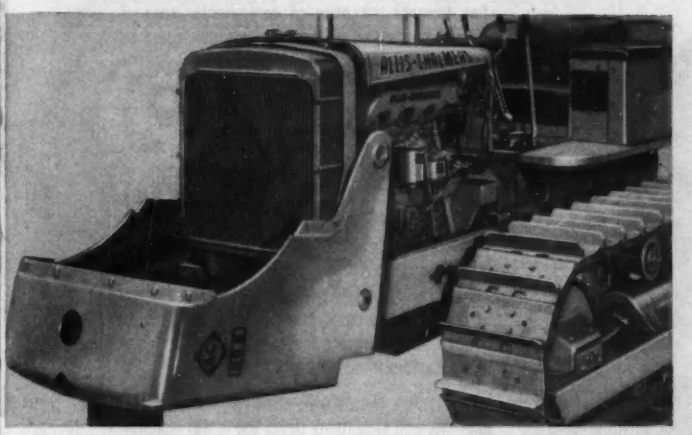


NEW-DESIGN, HEAVY-DUTY TRACK

The best available methods in metallurgy and manufacturing are used to produce HD-6 track that will provide long life under the toughest conditions. In addition to new over-all design, HD-6 sidebars benefit from new heat-treating methods which make possible new standards of strength and hardness *throughout* for extra wearability.

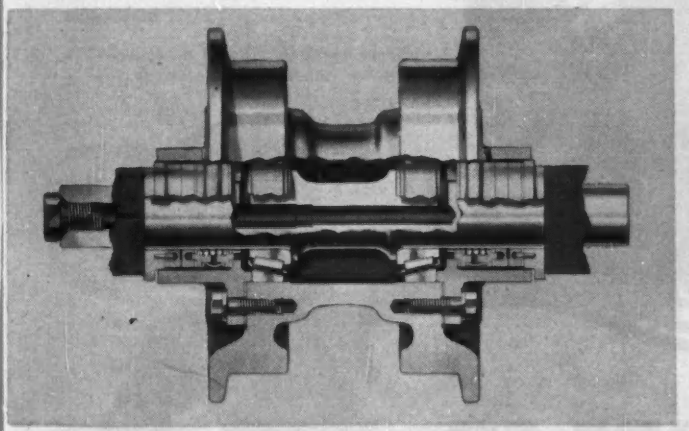


EXTRA CLUTCH LIFE — WITH CERAMIC LINING — The HD-6 master clutch offers simple, single-plate, overcenter design. Revolutionary new *ceramic* button clutch lining keeps clutch operating longer between adjustments . . . lengthens clutch life . . . reduces lever pull for easier operation.



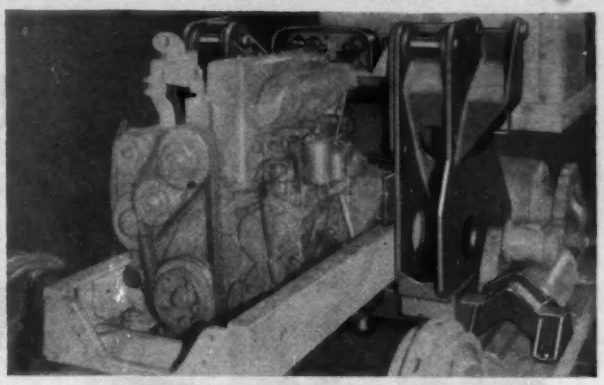
BIG, WELL-PROTECTED RADIATOR

Extra large, one-piece radiator provides all-weather cooling capacity. "Wrap-around" guard enables core to be mounted independently of guard for maximum strength and protection . . . and guard tilts forward for easy service accessibility.



SIMPLIFIED LUBRICATION

Truck wheels, idlers, support rollers need lubrication only once every 1,000 hours . . . because tapered roller bearings let Positive Seals work effectively to keep out dirt and moisture. No lube points under the tractor . . . no lubrication needed more often than every 75 hours. Go from one to two weeks without needing a grease gun.



HD-6G TRACTOR SHOVEL FEATURES

Here's the HD-6G shovel frame mounting assembly. The base of the side frame is mounted in the front to the tractor rigid beam, and at the rear to the truck frame. The upper part is bolted to a heavy steel "stabilizer" forming the cowl of the tractor. Together with the HD-6G's new hydraulic system, it provides greater strength, service simplicity and operator visibility. The HD-6G also offers a new two-position bucket, a two-speed reverse, and has extra long track, with six truck wheels on each side.

FEATURES AVAILABLE *ONLY* IN HD-6

. . . no other tractor in this size class has them — all-steel main frame; one-piece steering clutch and final drive housing; double reduction final drives; welded steel truck frames; roller bearing truck wheels, idlers and support rollers; extra-heavy truck wheels and guards available; Tru-Dimension tracks; wrap-around radiator guards; engine-mounted bulldozers; heavy-duty Allis-Chalmers diesel engine with "follow-through" combustion; rubber engine mounting pads; ceramic button master clutch lining; unit construction; 1,000-hour lubrication intervals for truck wheels, idlers and support rollers; 24-volt direct electric starting (standard); crankcase guard (standard); bumper and lights (standard).

Write now for more facts . . . or see your nearby Allis-Chalmers dealer

ALLIS-CHALMERS
Construction Machinery Division
Milwaukee 1, Wisconsin

Please rush more information on the new HD-6.

☐ Bulldozer-Drawbar Tractor ☐ Tractor Shovel

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IT'S NOT THE INITIAL COST

it's the upkeep...

Competitive bidding on water works projects has brought the price of comparable pipes of different specified materials to a nearly common level. Today, the important consideration for the buyer is not so much the first cost as the maintenance charges which continue throughout the life of the pipeline.

In any such comparison, the superiority of LOCK JOINT CONCRETE PRESSURE PIPE is demonstrated by the experience of hundreds of municipalities. One of the country's largest industrial cities, for example, reports that during 1954 NOT ONE CENT was spent for maintenance or repair of the more than 14,000,000 inch feet of Lock Joint Concrete Pressure Pipe in its water works system.

Your city, too, can virtually eliminate maintenance expense, and save many times the initial installation cost with Lock Joint Concrete Pressure Pipe.

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ENGINEERING NEWS-RECORD

Vol. 155, No. 17 October 27, 1955

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THE CONSTRUCTION WEEK

SIGNIFICANT ROAD TEST—Results of the Highway Research Board's Idaho tests—showing that continuous heavy truck traffic can damage bituminous surface in about the same measure as had been reported for rigid pavement (page 21)—are expected to rate considerable attention when Congressional committees again take up highway user tax proposals.

The Idaho tests, sponsored by the Western Association of State Highway Officials, will augment a comprehensive study of highway costs and user tax policies which the Bureau of Public Roads is scheduled to have ready for the opening of Congress.

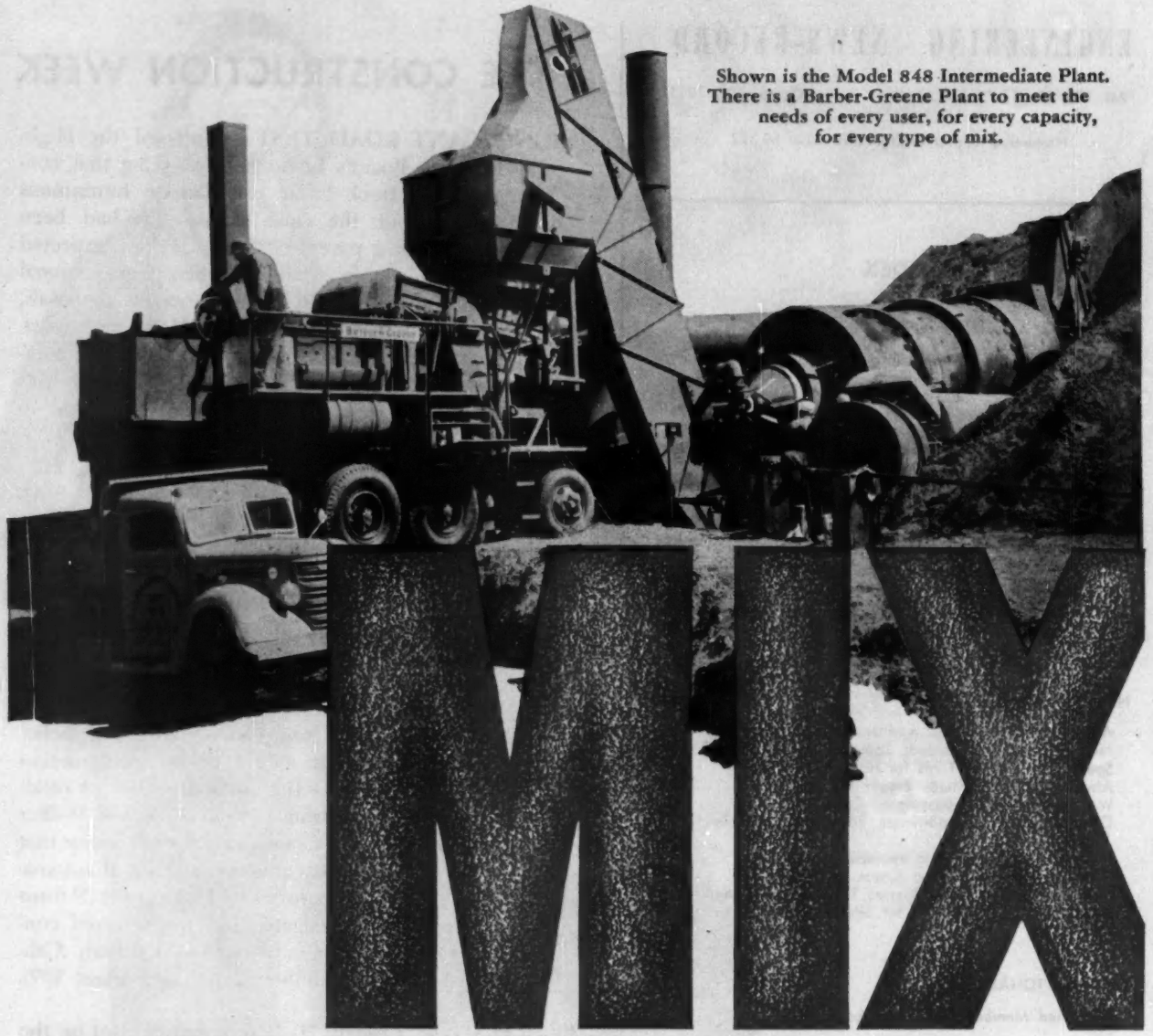
CONSULTANTS' BOOM—Toll highway design work was largely responsible for a 30% gain in new business taken on by consulting engineer firms last year (page 102). About 99% of this highway work was handled by firms which took on $1 million or more of new business. Actually, these million-dollar firms handled about 96% of all consulting engineer business last year.

NO ISOLATION—The sometimes comforting belief that the heterogeneous nature of the construction industry isolates it from the labor problems of other industries was shaken again last week. While Walter Reuther was warning a Congressional study group that few can escape the far-reaching implications of automation (page 106), AFL teamsters striking against 29 firms that produce rock aggregates and ready mixed concrete had construction activities in Southern California tied in a multi-million dollar knot (page 109).

"COLD WAR" PROJECT—The proposed dam on the Nile River near Aswan in Egypt has been given higher priority on the World Bank's calendar since the Soviets offered to build the project under a trade deal with Egypt. But, before the Bank or any other agency would be willing to put any cash on the barrelhead, Egypt will have to have some working drawings prepared as well as conclude an agreement with upstream Sudan on division of Nile River water.

Last week a U. S. dam expert was quietly dispatched to Cairo by the World Bank to look into the matter of a contract between Egypt and one or more consulting firms. (It is rumored that Sir Alexander Gibb and partners of London are ready to take up negotiations.)

Since the loan might exceed $100 million and the dam take 10 years to build, the Bank wants to be sure of the design and other preliminaries before it goes farther. An earlier Bank mission established the project's technical and economic feasibility. In addition to the proposed World Bank loan, there is also the possibility that the U. S. might be willing to have some of its $40 million a year in present economic aid diverted to the project.



Shown is the Model 848 Intermediate Plant. There is a Barber-Greene Plant to meet the needs of every user, for every capacity, for every type of mix.

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MIX profitably.

MIX more tonnage per season. **MIX** to meet all specifications.

MIX continuously, with the principle that is inherently automatic.

MIX with mechanically interlocked proportioning for the utmost uniformity.

MIX with the plant that is truly portable.

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CONVEYORS . . . . . LOADERS . . . . . DITCHERS . . . . . ASPHALT PAVING EQUIPMENT

WASHINGTON OBSERVER

The Administration is reacting to the tightness of mortgage credit. Nothing dramatic is being done, nor is early action contemplated. But the decision of the Federal National Mortgage Association this week suspending sales of its "seasoned" paper is a harbinger.

Fannie Mae acted to remove the threat of a $2.5-billion secondary portfolio overhanging the market. Stopping sales for the time being should tend to turn private money into new housing credit. To be sure, Fannie Mae has been selling very little in recent months; only $14,000 worth last week, only 3 million since July 1.

Tighter money has lowered the price for new mortgages. Making them better bargains than the prices asked by Fannie Mae for its more seasoned paper. The agency's prices have been 96 for 4%; 97.75 for 4¼% and par for 4½% mortgages. The stop order on sales won't do much to improve demand for new mortgages, but it will create a better atmosphere.

•

Political blowup is expected over building of $2.4-billion SAGE (Semi-Automatic Ground Environment) system for tieing together continental radar defense stations.

Western Electric has contract to build physical facilities needed to handle the telephone long-lines and electronic gear to funnel signals of approaching planes to central command posts.

Some Democrats say Army Engineers should supervise construction—that the government would be better served since engineering decisions on location and other questions can go more than one way.

Hearings are certain when Secretary Wilson presents Congress with a promised request which will wrap the package up in one bundle. Up to now, the SAGE program has been presented to Congress in several different pieces.

•

Civil works personnel of the Army Engineers won't be trimmed down by the new plan of the Pentagon to cut expenses by reducing the number of civilian employees. Plan calls for a 70,000 reduction.

Exemption for personnel connected with flood control, rivers and harbors indicates that their workload of construction will be going up, not down.

Strategy for passing the multi-billion highway program is being pulled together by the Administration. Several groups are involved in the renewed drive to get a law through Congress next year:

The new nine-man Governor's Committee is meeting next week to work out a policy on road-building that will be backed by the Governors. Members of the new committee are: Gary of Oklahoma, Herter of Massachusetts, Hodges of North Carolina, Leader of Pennsylvania, Ribicoff of Conn., Stratton of Ill. Chairman Kohler of Wisconsin, Lausche of Ohio, and Patterson of Oregon are carry-overs from the old committee.

White House staffers are working hard on highways, too. They will sit in with the governors, and offer up what the Administration wants, and what it will take.

•

More towns are now eligible for airport construction money from the Civil Aeronautics Administration. It's a revision of the policy that up to now has required that a city already have a certain level of air business to qualify for the federal matching funds.

Now, a town can apply if it can show that an airport is needed to serve existing firms in the area, or even if it can demonstrate that a new airport would attract new business.

An earlier revision permits funds to be used for terminal buildings. Previously, the money could only be used for airfield improvement.

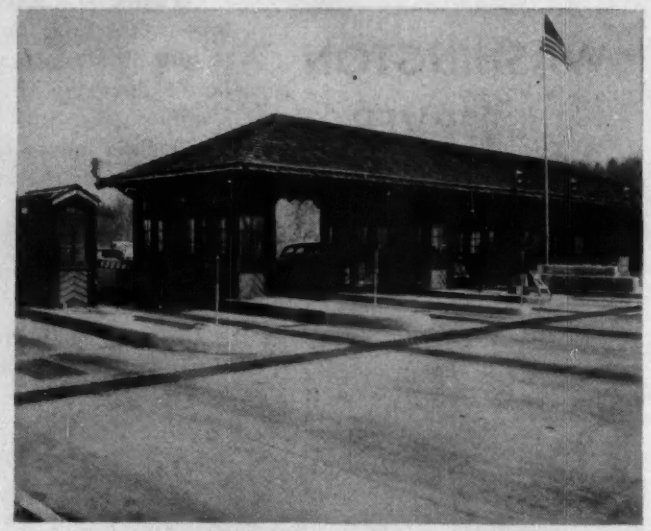
Deadline for applications for this year's money is December. There's $42.5-million yet to be handed out.

BORDEN *first* IN FLOOR GRATING

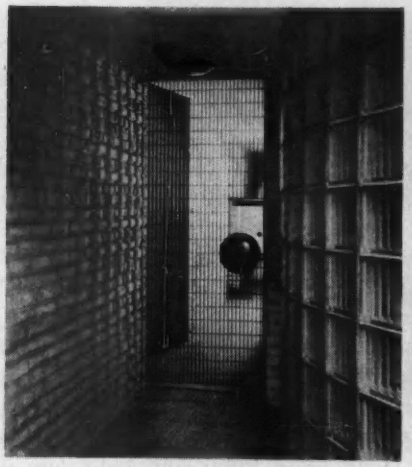
USES OF GRATING . . . WHERE ONLY BORDEN QUALITY WOULD DO . . .

Here on this page are a few of the many new or unusual uses for grating being pioneered every day. Each is an exacting job where only standards of quality equal to BORDEN'S will do.

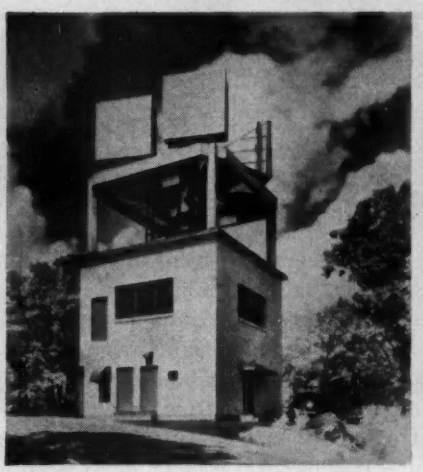
And remember . . . BORDEN manufactures every type grating in ferrous and non-ferrous metals.



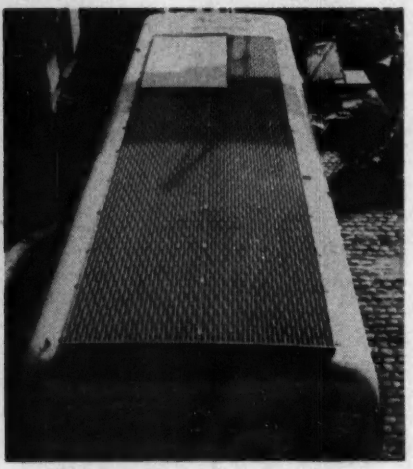
ON THE MERRITT PARKWAY . . . The recently installed Borden Roadway Grating shown here helps solve a drainage problem. Over 80% open, these Borden gratings give years of durable, minimum-maintenance service. And remember, SPECIFY BORDEN and you specify the best.



Only the finest precision manufacturing would satisfy the architect who designed this door. BORDEN is recognized as a leader in quality, custom-manufactured gratings.



Television relay stations and radar stations that gird our continent have adopted grating as standard outside platform material. It will not collect snow as most other platforms will.



Wherever this Color Television truck goes, whatever the assignment of the reporters who must mount its roof, Borden riveted *serra-crimp* grating will mean surerfooting —even in ice or snow.

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SOUTHERN PLANT—LEEDS, ALA. — MAIN PLANT—UNION, N. J.

ROAD TESTING—This field crew member lines up a truck with concrete blocks for pavement deflection readings.

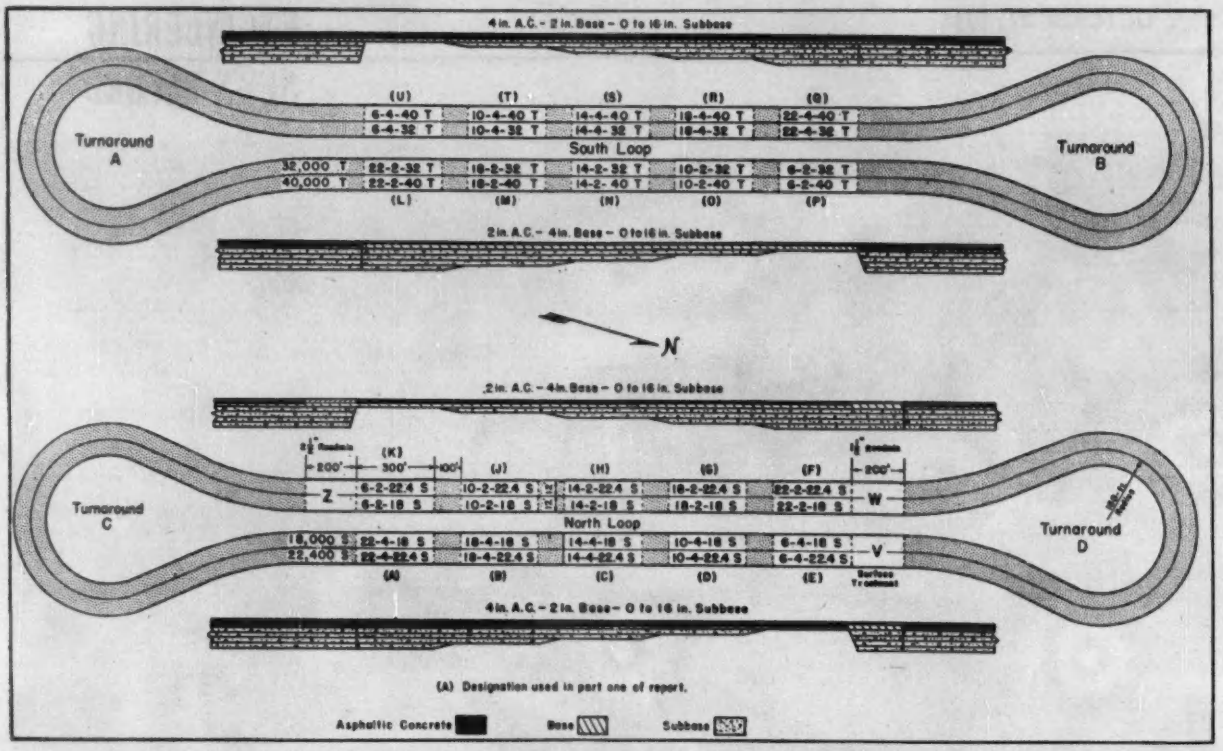
After 14 months of experiments on specially constructed bituminous pavements by the Highway Research Board at Malad, Idaho . . .

Road Test Again Puts Truckers on the Spot

Results of the recent pavement test project in Idaho show that continuous heavy truck traffic has much the same effect on bituminous-surfaced highways as had previously been reported for rigid pavement as the result of a road test made in Maryland in 1950. In brief, the heavier loadings permitted under state laws do the greater damage, and the permissible tandem-axle loads cause more damage than allowable single-axle loads.

For the commonly used truck loadings, the test results show that, for the same number of applications of load:

- Single-axle loads of 18,000 lb caused less distress than 22,400-lb loads on the same thickness of pavement in the adjacent lane.
- Tandem-axle loads of 32,000 lb developed less damage than 40,000-lb loads in the contiguous lane.
- A lesser number of applications of the tandem-axle loads produced distress in the pavement equivalent to


4 in. A.C. – 2 in. Base – 0 to 16 in. Subbase
(U) (T) (S) (R) (Q)
6-4-40 T 10-4-40 T 14-4-40 T 18-4-40 T 22-4-40 T
6-4-32 T 10-4-32 T 14-4-32 T 18-4-32 T 22-4-32 T
Turnaround A
South Loop
Turnaround B
32,000 T 22-2-32 T 18-2-32 T 14-2-32 T 10-2-32 T 6-2-32 T
40,000 T 22-2-40 T 18-2-40 T 14-2- 40 T 10-2-40 T 6-2-40 T
(L) (M) (N) (O) (P)
2 in. A.C. – 4 in. Base – 0 to 16 in. Subbase
N
2 in. A.C. – 4 in. Base – 0 to 16 in. Subbase
200' (K) 300' 100' (J) (H) (G) (F) 200'
Z 6-2-22.4 S 10-2-22.4 S 14-2-22.4 S 18-2-22.4 S 22-2-22.4 S W
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Turnaround D
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22,400 S 22-4-22.4 S 18-4-22.4 S 14-4-22.4 S 10-4-22.4 S 6-4-22.4 S
(A) (B) (C) (D) (E)
4 in. A.C. – 2 in. Base – 0 to 16 in. Subbase
(A) Designation used in part one of report.
Asphaltic Concrete
Base
Subbase

The test sections Each 300 ft long, were located in the 1,900-ft long straightaways of each test loop. Numbers in the test sections indicate total pavement thickness, thickness of bituminous surfacing, axle load and whether single or tandem axles. Special surfacing studies were made in sections V. W. and Z.

that resulting from a greater number of comparable single-axle loads.

• Stated another way, 22,400-lb single-axle loads require a stronger road structure than 18,000-lb loads. Similarly, 40,000-lb tandem-axle loads demand a stronger pavement than 32,000-lb loads. Finally, tandem-axle loads of 32,000 lb call for a stouter road structure than supposedly equivalent 18,000-lb single axle loadings, while 40,000-lb tandem loads require heavier pavement than 22,400-lb single-axle loads.

Sponsored by the Western Association of State Highway Officials, the tests were carried out by the Highway Research Board on specially constructed pavements at Malad, Idaho, during a 14-month test-truck operating period November, 1952, through May, 1954. In this period, bituminous pavements of varying thickness and types of construction in four lanes were subjected to repeated applications of uniform axle loads—either single-axle or tandem axle—to a total of 238,000 applications for each lane.

Cooperating with the states who were members of the WASHO in this test operation were the Bureau of Public Roads, truck and trailer manufacturers, and oil companies. The test work was done by a special staff set up by the Highway Research Board.

Because of unfavorable reactions to release of information concerning results of the Maryland road test during the progress of that testing operation, elaborate precautions were taken on the Idaho project to see that no information concerning the results leaked out before all the results had been carefully analyzed and interpreted by the WASHO road test advisory committee. The findings have just been made public.

• **The test loops**—Two test loops were constructed, as shown in the accompanying drawing, each with two 1,900-ft long two-lane straightaways in which the test pavements were laid for observation purposes. Three 200-ft sections at the ends of the straightaways were topped with roadmix and surface treatment.

Soils at the project site are silt loams bordering on silty clayloams, classified as A-4. As the advisory committee for the project desired to produce a test conforming as nearly as possible to present-day practice, samples of the soil and materials to be used in the base and subbase were sent to the sponsoring states and they were asked to submit designs for an assumed traffic volume of 4,000 vehicles per day, including 1,000 commercial vehicles, of which 400 would be three-axle trucks or heavier. The average of the design thicknesses submitted, including base and subbase, was 18 in.

• **Types of pavement**—Taking that 18 in. as a median thickness, the advisory committee set up two thicknesses of plant-mix asphaltic concrete for the test pavements in each loop, 2 in. on a 4-in. base of ¾-in maximum crushed gravel, in one tangent and 4 in. on a 2-in. base course of the same gravel in the other. The committee decided to test five subbase conditions varying from no subbase at all through 4-in., 8-in., and 12-in. originally specified for pit-run gravel, the subbase specification later was modified to admit 2-in. maximum crushed boulders.

Each roadway consisted of two 12-ft lanes with 6-ft shoulders, subgraded for full width. All base and subbase layers extended the full width of the cross section. Great care was exercised in construction of the subgrade in order to provide uniformity in density and moisture content.

• **Test runs**—Construction of the pavements and the installation of test instruments was completed in the fall of 1952, after which light conditioning traffic was run over the test loops. Then, on Nov. 10 a fullscale operation of the test vehicles was begun and continued until Nov. 27 when the subgrade froze. In that period, 17,000 load applications had been made to each test section.

During the winter, snow was kept off the pavements and shoulders, and

one vehicle with 10,000 lb on a single axle was operated in a uniform pattern over the test loops.

Traffic was resumed the following June when deflection measurements under load appeared to indicate that the pavement was ready for testing. The indications were premature, as a few test loads soon showed.

Development of damage between June 11 and June 20, 1953, was the most rapid for any period of the test. The rate increase in areas of distress averaged 748 sq ft per day, while the rate of load applications averaged only 12 per day.

By contrast, the lowest rate of increase came in the final days of the test, May 22-29, 1954, when the average increase in distress area was one square foot per day and the average applications number 1,173 per day.

Test traffic operated from the second week of June 1953, to the second week of December. After a two-month winter interval, traffic resumed in the middle of February and continued until end of May.

• **Safe pavement thicknesses**—Pavements with a 4-in. asphaltic-concrete surface stood up far better than a road structure of equal thickness with a 2-in. asphaltic-concrete surface. From a study of the test results of the writers of this report concluded that the minimum thickness of built-up pavement that would take the 238,000 applications for the four test loads are these:

(A) For the outer wheel path with 2-in. asphaltic-concrete surface—16 in. for the 18,000-lb single axle, 20 in. for 22,400-lb single, 18 in. for 32,000-lb tandem, and 21 in. for 40,000-lb tandem;

(B) For the inner wheel path with 2-in. surface—14 in. for all four loads. (This thickness was undamaged by any of the four);

(C) For the outer wheel path with 4-in. asphaltic-concrete surfacing—10 in. for the first three loads and 14 in. for the 40,000-lb tandem axle load;

(D) For the inner wheel path, with 4-in. surface—6 in. for the two single-axle loads and 10 in. for the two tandem-axle loads.

• **Pavement maintenance**—During the test operations the pavements were maintained in the manner prescribed by normal highway-maintenance practices.

These findings are contained in Part 2 of the WASHO Road test, issued by the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C., $3.60. Part I, covering Design, Construction, and Testing procedures, sells for $2.25.

Another Snake River Dispute?

Public power group takes steps to stop construction of low-dam projects at Mountain Sheep and Pleasant Valley

Last week the fate of two new Northwest power projects rested in the hands of the Federal Power Commission.

Puget Sound Power & Light Co. expects an early nod of approval on its plans to build an 85,000 kw hydroelectric plant on Washington's Upper Baker River. But Northwest Power Co.'s project—two dams on the middle Snake River—may start another Hells Canyon-type controversy.

Northwest Public Power Association already has moved formally to oppose PNW's application for low dams at Mountain Sheep and Pleasant Valley sites on the Snake River. The public power group, which has filed a petition of intervention with the FPC, supports federal development of the 20-mi stretch with a high dam at the downstream Nezperce site.

• **Snake River schemes**—The Nezperce project as proposed by the Corps of Engineers would have 1,980,000 kw generation capacity and would store 6,600,000 acre-ft behind a 615-ft-high dam. Its 64-mi reservoir, reaching past the mouths of Idaho's Salmon River and Oregon's Imnaha River, would back water almost to any federal dam in the Hells Canyon stretch.

The two low-dam sites that have been under investigation by PNW would develop 1,446,000 kw at a cost of $210 million. They would supply energy for Washington Water Power, Portland General Electric, Pacific Power & Light, and Montana Power Co. (ENR April 21, p. 46).

The public power groups' petition is expected to raise new legal questions. Gus Norwood, executive secretary to NPPA lists some of them: "Establishment of a five-state private power monopoly, unjustifiable federal tax subsidies, interlocking directorates, and private control of the Columbia River."

In reference to the upstream Hells Canyon site Norwood says: "The Nezperce and Hells Canyon cases are almost identical. In each instance the private electric corporations insist on a 50% job with small dams to skim the cream off the river's power."

The Salmon River brings up another problem: Fisheries. This looms so formidable that the Corps of Engineers has never pressed for congressional approval of construction funds. The Salmon River is one of the great salmon-spawning tributaries of the Columbia, and there is serious question as to whether closure of its mouth by a dam would be sanctioned.

• **Washington project**—The second Northwest project on the FPC's desk—the $27-million one planned by Puget Sound Power & Light Co.—involves 300-ft-high dam. It would be located about eight miles above the company's present Baker River project, which is 90 miles north of Seattle. It would impound 238,000 acre-ft of water in a 9-mi-long reservoir.

The greater control of the Baker River flow, which the planned dam makes possible, will permit the addition of another 55,000 kw in installed capacity at the present lower Baker plant. Cost of enlarging the lower plant is estimated at $8 million.

Flaw in Bidding

Baltimore tunnel approach goes to second-low bidder

Contracts for construction of a viaduct section of the northern approach to the Patapsco River vehicle tunnel under Baltimore Harbor have been awarded to the McIlean Contracting Co. of that city on a combined bid totaling $6,615,353.

Separate bids had been called by the Maryland State Roads Commission on the substructure and superstructure. McIlean's combined bid on the two contracts was $101 over a combination of its bid on the substructure and that of the Square Construction Co. on the superstructure, but the commission refused to accept the Square Co bid because it was not properly signed.

The commission's actions in refusing to accept the Square Co. bid and in awarding the two contracts to the McIlean Co. has been confirmed by the state's attorney general. In so doing, the attorney general said that the commission could reject a proposal that did not conform to the specifications. He added that under the statute covering such contracts the commission could award the contract to other than the low bidder where the interests of the state would be better served by letting a combined contract.

The two contracts cover 4,781 ft of approach near the north end of the tunnel, of which 3,331 ft is viaduct carrying two 28-ft roadways separated by a 4-ft wide barrier.

Blight Fight Makes Progress

Last week San Francisco and Chicago smoothed the way for the start of redevelopment projects in two much-discussed neighborhoods.

San Francisco's move involved Board-of-Supervisors approval of final plans for the 325-acre Diamond Heights project. In Chicago, the Land Clearance Commission gave its nod to a scheme of the Illinois Institute of Technology to develop a 38-acre area adjoining its campus.

The two projects have been motivated by almost completely different problems.

Diamond Heights is sparsely settled. It's not actually a slum area, but has been called blighted because the topography—steep streets—has made it nearly useless to the city. Plans call for converting the area to a residential community that will furnish 2,300 families with new homes and apartments.

The Chicago project, on the other hand, would restore one of the city's worst slum spots. At present the area engulfs some 1,400 persons in 135 structures. But 85% of these dwellings are dilapidated or lack sanitary facilities. Plans call for both campus and residential redevelopment on the site.

• **San Francisco plans**—Approval of the $30-million Diamond Heights project comes as a climax to a five-year delay caused by legal barriers. One time-consuming drawback was the need to establish constitutionality of the California community redevelopment law (ENR, Dec. 16, 1954, p. 28). This was done with a test suit after the San Francisco Redevelopment agency refused to sign a request for the project on the grounds that it was not a blighted area.

Now that San Francisco has cleared the plans, redevelopment agency can begin to acquire property in the area. Land purchase is expected to get under way next April, and the site will be ready for resale on a competitive basis to private developers by January, 1958.

New housing will range from single-family homes to apartment buildings. At present there are 130 dwellings in the area. Owners of about 80 of these will be allowed to retain their homes if they bring them up to standard.

The first step in Diamond Heights rehabilitation will be construction of streets that follow contours of the steep hillside site. Present unpaved streets follow a grid pattern. This has been a major obstacle in development of the area.

The $30-million price tag on the project is the estimated amount private developers will put into constructing housing for 7,500 people. The redevelopment agency's investment will come to $6.6 million—that's the amount of the loan the agency will seek from the Federal government. Additional sources of money will be a $772,000 Federal capital grant and a $675,000 grant-in-aid from the city. The agency also expects to recover $5.8 million through sale of building sites.

• **Chicago plans**—The Chicago project involves an irregularly-shaped area bounded roughly by 30th st. On the north, Michigan Ave. on the east, 35th st. on the south, and the alley west of Dearborn St. on the west.

As soon as the City Council and the State Housing Board pass on the plan the Land Clearance Commission can go to work acquiring the 13.1 acres still needed for the project. The Illinois Institute of Technology and the Board of Education already own 11.7 acres of the site. The rest of the project area is absorbed by streets and alleys.

This is the commission's eighth project in a program designed to provide the city with some 5,000 modern dwellings. One project already is under construction, and the others are in the land-acquisition stage.

Baltimore Expressway Nears Bid Stage

Before the end of the year, Baltimore plans to award the first contract for construction of its $70-million Jones Falls Expressway.

The new expressway will be the major north-south spoke in the long-range plan calling for a network of radial and ring routes to carry the burden of intra-city traffic.

The controlled-access expressway will feature 40-ft roadways and median strips 4 to 10 ft wide. It will run for approximately six miles within Baltimore city limits and will include construction or reconstruction of some 20 bridges, five full interchanges, three sets of partial interchanges, large conduits and viaducts.

The new super highway will follow the route of Jones Falls, a small stream that flows south through the heart of the city until it empties into Baltimore harbor. Under the current plans it will extend from a spot just south of the city's center to the northern city limit.

It will be extended by the Maryland Roads Commission to connect with the Baltimore County Beltway, already under construction. Thus traffic will be able to swing a short distance to the east to join the interchange of the beltway and the new Baltimore-Harrisburg Expressway, also under construction.

At the southern terminus the expressway will tie in at the harbor-front beginning of Eastern Ave. However, many Baltimore officials feel that more ambitious plans will be needed at this point to connect the expressway with the extensive approaches to the Patapsco River Tunnel, which will be opened by December, 1957.

Consulting engineers are now working out plans for the first three contracts to be placed under contract. These are:

• A 2,339-ft-long reinforced box conduit, estimated to cost $2.8 million. It will run from a point west of Guilford Ave. to a point east of Howard St. The expressway will be laid over this conduit as it travels under the north-south bridges. Consulting engineers for the conduit are Whitman, Requardt & Associates. Their plans are due Oct. 31.

• Replacement of Calvert St. Bridge. The new $1.2-million span will be 649-ft-long, 60-ft wide and feature a 48-ft wide roadway. Plans are due Dec. 20 from Rummel, Klepper & Kahl, Baltimore engineers.

• Construction of a 4-mi section of the expressway from a point just above North Ave. north to beyond Newington Ave. The contract will include grading, retaining walls, a 750-ft viaduct and a single-span steel bridge 30-ft long. Plans are due from J. E. Greiner Co. on Jan. 15.

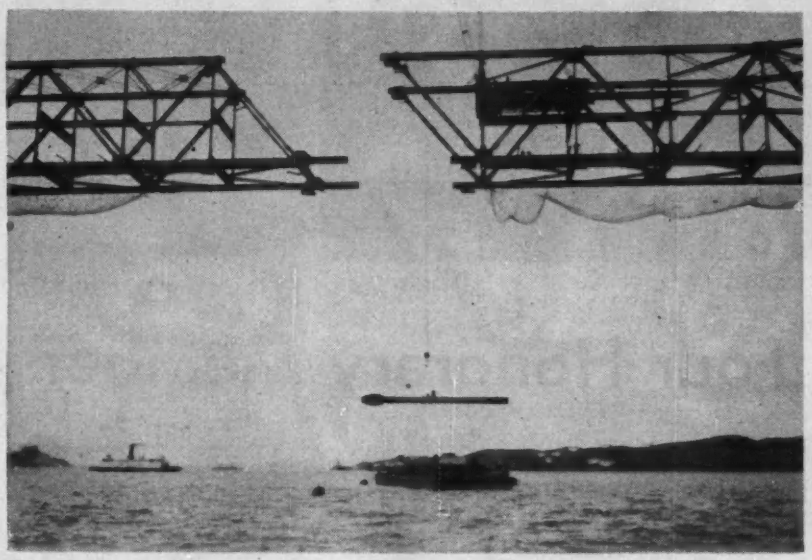
Revise Model Code

Building officials group will qualify fabricators

Despite industry opposition, the Pacific Coast Building Officials Conference decided at its 33rd annual meeting, in Portland, Ore., to set up a system of approvals for fabricators.

Approvals of fabricating shops will be handled by the PCBOC research committee in the same manner as product approvals now are, with inspections and tests being conducted by an independent testing agency. Fees will be the same as for products—$150 for an original application and $100 for each re-examination, probably annually. First approval probably will not be issued until after Jan. 1, 1956.

The object of the PCBOC action is to assist building officials in evalu-



Closure Completed for Cantilever Span

Closure of the east cantilever span of the Richmond-SanRafael Bridge in San Francisco Bay has been completed by superstructure contractors Judson-Pacific-Murphy-Kiewit. The west cantilever span has not been erected yet. The 2,140-ft long structures will provide 1,000-ft wide channels. The east span crosses a secondary ship channel and provides 135-ft navigation clearance. The one on the west will span the primary ship channel with 185-ft clearance. All other steel work on the vehicular crossing of the north arm of San Francisco Bay is virtually completed, (ENR Nov. 4, '54, p. 33). Plans call for opening one deck of the $68-million structure to traffic in October, 1956. The superstructure is being built under a $21-million contract held by a joint venture of Judson-Pacific-Murphy Corp., of Emeryville, Calif.; and Peter Kiewit Sons Co., of Omaha, Neb. Construction agency of the project is the California Department of Public Works.

ating factory-assembled building components, especially those fabricated outside the jurisdiction of local inspectors.

According to Hal Colling, managing-secretary, first attention will be directed to fabricators of glued laminated timber and welded steel trusses. Later, precast and prestressed concrete beams, and eventually, prefabricated houses, will be considered.

To accomplish their objective, the building officials voted to add to Sec. 305 of the Uniform Building Code the following subsection: "Special inspections required by this section and elsewhere in this code shall not be required where the work is done on the premises of a fabricator approved by the building official to perform such work without special inspection. The certificate of approval shall be subject to revocation by the building official if it is found that any work done pursuant to the approval is in violation of this code."

It is expected that the building official, in deciding whether or not to certify a fabricator, will be influenced by PCBOC's approval or disapproval of the fabricator.

Industry objections were principally that PCBOC was putting itself in the position of investigator, witness, judge and jury and that the approval system is unnecessary because industry associations could achieve the same result.

These charges were denied by building officials in debate on the measure, which was passed unanimously.

C. S. McCormick, building superintendent, Tacoma, was elected president; M. S. Carlson, building official, Alameda County, Calif., first vice president; and C. D. Griffin, Los Angeles County superintendent of buildings, second vice president. Hal Colling continues as managing-secretary.

Too Many Cars

Six cities go to work on off-street parking plans

Last week across the country six car-congested cities faced new developments affecting future financing and construction of off-street parking facilities.

• **Columbus**—Ohio's Gov. Frank Lausche has appointed a new five-man commission to handle construction of a 1-200-car parking garage beneath Columbus' State-house grounds. The commission, which has authority to issue revenue bonds, can build and either operate or lease the facility. It can—under a 1955 state law patterned after the Ohio Turnpike Act—borrow funds for a feasibility study from the state highway director.

• **New York City**—The traffic Commissioner has requested a $10-million addition to a $6-million appropriation to expedite a program for off-street parking facilities. The 1956 program calls for advancing 22 projects. These would cost an estimated $23.1 million.

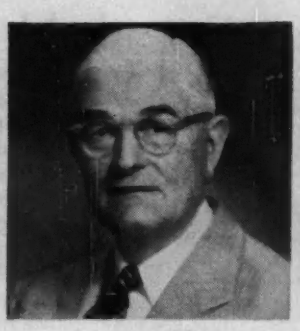
• **Pittsburgh**—After winding up a traffic survey of the Golden Triangle, Wilbur Smith & Associates has recommended the addition of 700 new off-street parking spaces annually for the next decade. During the past 10 years 4,476 parking spaces have been provided, 2,882 of them in four downtown garages raised by the city's parking authority. Despite this, the New Haven, Conn., Engineering firm found that there is still a shortage of 2,358 spaces at peak hours.

• **Cincinnati**—A report by DeLeuw-Cather, Chicago engineering firm, has proposed a $10.5-million development to produce 3,399 parking spaces at seven downtown sites. One major project would be a three-deck underground garage beneath Government Square to handle 1,000 to 1,500 cars. The parking space deficiency in the seven areas is estimated at 1,500—and 1,300 more will be lost in construction of the Third Street Distributor. But the engineers did not recommend a long-range program because it would be made obsolete by changes in the central business district.

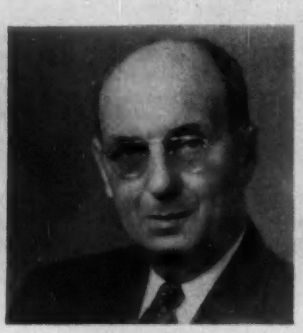
• **Milwaukee**—A new off-street parking plan involving 13 new facilities has been drawn up to meet the city's minimum downtown needs. Most of the sites in the proposed plan are adaptable to multi-level parking structures and involve existing buildings that have deteriorated or are starting to deteriorate. Acquisition of necessary land would cost about $5 million. The program would be financed with revenue from parking meters and similar sources as well as from revenue from operation of the proposed parking facilities.

• **Lansing**—A proposed $2.7-million off-street parking bond issue will be put before voters in this Michigan city in November. Meanwhile, the Lansing Downtown Business Association has submitted a plan whereby merchants could subsidize city parking facilities.

J. I. Parcel



F. A. Banks



P. H. Martin

L. O. Colbert

ASCE Names Four Honorary Members

Four honorary memberships were conferred by the American Society of Civil Engineers this week at its annual meeting in New York. Those honored were Frank A. Banks, of Coulee Dam, Wash.; Rear Admiral Leo O. Colbert, of Washington, D. C.; Park H. Martin, of Pittsburgh, Pa.; and John I. Parcel, of St. Louis, Mo.

Frank A. Banks has been actively associated with some of the largest dam construction projects in the United States and has served as a consultant for other major dams in Canada and India. Starting as a rodman and costkeeper with the U. S. Reclamation Service in 1906, he later became construction engineer and district manager in charge of construction and development of the Columbia Basin Project. This included construction of Grand Coulee Dam and power plants.

Among the many other projects he worked on were Arrowrock Dam; Jackson Lake Dam, in Wyoming, the Minidoka Project and American Falls Dam, Idaho; and the Owyhee Dam and Irrigation project in eastern Oregon. He served as construction and supervising engineer and project manager for the Bureau of Reclamation from 1933 to 1950, with a year's leave of absence from the Columbia Basin Project in 1939, to serve as acting administrator of the Bonneville Power Administration. Since his voluntary retirement in 1950, Banks has been a consultant to the Bureau of Reclamation. He was also a consultant to the Province of British Columbia on construction of Kenny Dam and to the Government of India on construction of the Bhakra Dam in Punjab. He maintains an active role as a member of a number of important water resources development committees. At the formal dedication of Grand Coulee Dam on May 11, 1950, Banks received the Distinguished Service Award, highest honor conferred by the U. S. Department of the Interior.

Rear Admiral Leo. O. Colbert, who recently retired from the U. S. Coast and Geodetic Survey, devoted his entire professional career to the Survey and served as its director for 12 years, including its greatly expanded wartime period. His work included field assignments as navigator, executive officer and commanding officer of various survey ships operating in U. S., Philippine and Alaskan coastal waters.

One of his major achievements came during the early 1930's when he commanded a ship engaged in a comprehensive hydrographic survey of Georges Bank, off the Massachusetts coast. This survey disclosed for the first time the submarine topography of the northeast Continental Shelf.

During his administration as chief of the Division of Charts, important advances were made in aviation charting. Accuracy of these charts became so well established that they are still used for navigational purposes.

Admiral Colbert has been a member of the Mississippi River Commission and the advisory council of the Princeton University Department of Civil Engineering, as well as a trustee of the Woods Hole Oceanographic Institute. Since his retirement from the service, he has been director of the Washington office of the Arctic Institute of North America.

Park H. Martin has been one of the principal figures in the rebuilding of Pittsburgh. For the past 10 years, he has been executive director of the Allegheny Conference on Community Development—a private, non-profit citizens' group that sparked the Pittsburgh renaissance. He brought to the post a wealth of experience from more than 20 years of private engineering practice in Pittsburgh.

After serving as chief engineer and assistant director of the Allegheny County Department of Public Works, Martin was named director of the Allegheny County Planning Department. In this capacity he was largely responsible for the planning, design and development of such major projects as the Penn-Lincoln Parkway, and the Greater Pittsburgh Airport.

Martin holds numerous advisory posts connected with the long-range Allegheny County Improvement program. He is one of the few men who have received an honorary degree of doctor of engineering from Carnegie Institute of Technology.

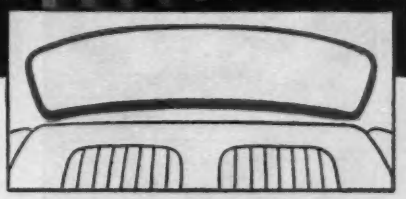
John I. Parcel, vice-president of the St. Louis firm of Sverdrup & Parcel, has been successful as both a teacher and a consultant. For 24 years, he taught engineering, for the most part at the University of Minnesota, where he headed the structural engineering department from 1919 to 1936. Since 1928 he has also been in partnership with L. J. Sverdrup. In 1936, he left his teaching post to devote full time to the firm's activities.

Parcel was consulting engineer on design of the Minneapolis Auditorium, was on the consulting board for the redesign of the Tacoma Narrows Bridge and was a member of the consulting board on the proposed Puget Sound Bridge. He was co-author with the late Prof. C. A. Maney of an engineering text, Treatise on Statically Indeterminate Structures and of a monograph on Secondary Stresses in Kenova Bridge.

Among the new officers inducted at this week's convention were Enoch R. Needles, of Howard, Needles, Tammen & Bergendoff, (ENR Oct. 20, p. 85) who becomes ASCE's 87th president, and two new vice presidents, Frank A. Marston for Zone I and Glenn W. Holcomb for Zone IV.

Frank A. Marston has been a partner in the Boston engineering firm of Metcalf & Eddy for 35 years. Since 1937, he has been consulting sanitary engineer on the staff of the chief engineer for the Board of Water Supply for New York City.

Glenn W. Holcomb is a noted educator. He is chairman of the Department of Civil Engineering at Oregon State College. He has written numerous engineering manuals.



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New Solutions for Old Safety Problems

Contractors urged to adopt pre-job physical exams

Four leaders in the construction industry leveled their sights on the multiphased problem of job-safety last week in Chicago—drew a bead on its inherent weaknesses—and came up with a variety of measures needed to make both special and run-of-the-mill construction jobs safer places in which to work.

Some of the suggestions represented the latest philosophies of accident prevention while others merely reemphasized the importance of accepted safety procedures of long standing. The four speakers included two steel erectors, a general contractor and a public works official.

Speakers at the two-day conference of the National Safety Council's Construction Section held in conjunction with the 43rd National Safety Congress, presented a number of "musts" of accident prevention. They are:

- Management must give its wholehearted support to safety programs.
- Responsibility for safety must be assigned to the proper persons and they must be given full authority to take action.
- Preplacement physical examinations should be employed to select qualified workmen.
- Workmen must be taught specific safety measures that apply to their own jobs.
- Construction equipment must be designed for safe handling, and maintained in top operating condition.

• **Preplacement physicals**—A strong plea for preplacement physical examinations as a benefit to both labor and management, was made by John A. Volpe, for the past three years Massachusetts' Commissioner of Public Works—but better known through the construction industry as president of John A. Volpe Construction Co. Inc.

"This controversial subject of preplacement examinations must be accepted for the problem that it is by both labor and management," said commissioner Volpe. "It must be worked out on a cooperative basis and solved by the adoption of a workable program. "Such a program will facilitate the placement of the employee on jobs suitable to his physical capability. And, it will help insure his safety as well as the safety of his fellow workers. From management's standpoint it permits placing the best qualified men in the operation for which they are best suited. Such a program will also serve as tangible evidence that management has a sincere interest in its employees and serve to attract better workers," he said.

• **Contractor's views**—Another speaker, Charles A. Richardson, vice-president, Merritt-Chapman & Scott Corp., outlined his company's plan for "human maintenance" on construction. He told an audience of 300 that, "a healthy workman is more efficient and less accident-prone than one who is not feeling well."

"We provide for this human maintenance in two ways," he said: "By maintaining a fully equipped, air-conditioned mobile hospital unit and registered nurse on all major projects . . . and coordination of our medical and safety programs, companywise, by a physician based at company headquarters who serves as a full-time medical and safety director."

Emphasizing the rewards of good safety practices, Richardson briefed his listeners on the impressive safety record set by his company on substructure construction for the $80 million suspension bridge over the Straits of Mackinac (ENR Jan. 27, 1955, p. 35).

"Despite the hazards posed by darkness, cold weather, high waves and blustery winds," he said, "there were only 11 lost-time accidents during the first 7 months of this year. During that time a total of 565,000 manhours of work were performed on an around-the-clock basis, for a lost-time frequency rate of only 19.5 per million manhours. For the same period, concluded Richardson, the accident severity rate was only 1.23 days lost per 1,000 man hours.

• **Safer steel erection**—Credit for improved safety in steel erection is due to safer equipment and more attention being paid to details of accident prevention. These were the views of W. G. Rapp, assistant to the general manager of erection, Bethlehem Steel Co.

"Erection methods haven't changed radically in the past 20 years," declared Rapp, "but equipment manufacturers have listened more and more to the suggestions of steel erectors. From these suggestions have come improved cranes, hoists, compressors and similar equipment, with resulting greater efficiency and safety."

• **Management's responsibility**—Similar views on attracting qualified workmen were expressed by Alan A. Porter, vice president of erection, American Bridge Division, U. S. Steel Corp. Stressing the need for management's wholehearted support in safety pro-

(*Continued on page 32*)

How Hamilton helps get the work done

More service and accuracy per dollar with Four-Post wood tables

Table shown is No. 221A. But interchangeable drawer equipment and variety of top sizes mean a wide choice to meet practically every drafting department need.

Economy is only one factor in the popularity of Hamilton Four-Post wood drafting tables. Bases are carefully selected and seasoned hardwood—strong and steady for long, satisfactory service. Heavy legs are 2½ inches square for solid rigidity, their corners rounded for appearance and no-snag protection. Easy-running drawers have non-warping welded fiber bottoms. Key-stock basswood tops are smooth and square, will not warp nor develop cracks, holes or crooked edges. Standard 37-inch height and convenient adjustability make for fast, comfortable work and maximum draftsman-productivity.

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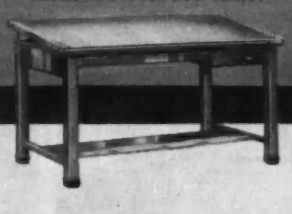

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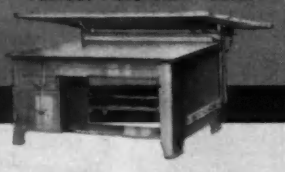

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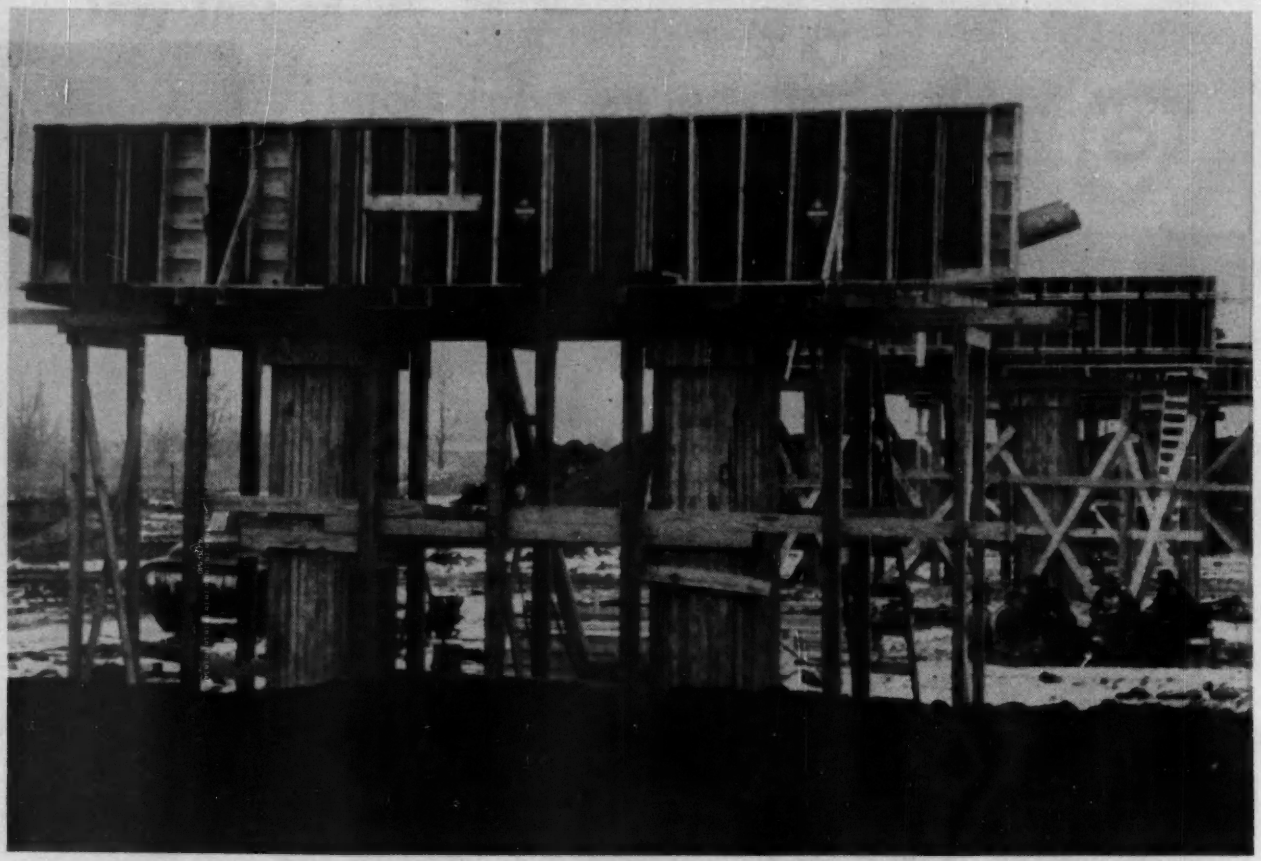

Balsam-Wool insulated forms were used on many bridges of the Indiana East-West Toll Road in zero degree weather of 1954-55.

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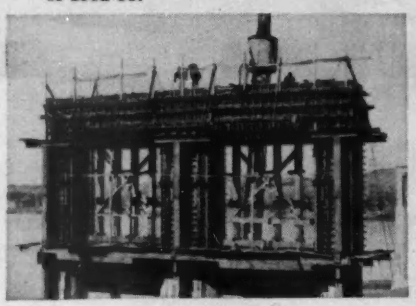
This new, revolutionary method of winter concrete construction has proved successful in protecting concrete during cold weather on many important projects. Balsam-Wool sealed insulation retains heat of hydration of the concrete and maintains proper curing temperatures. Fire hazards are reduced and considerable savings effected because tarpaulin enclosures, fuel and watchmen are generally unnecessary.

Separate investigations by the U. S. Bureau of Reclamation show that insulated forms result in good temperature control of concrete structures under weather conditions as cold as 0° F. Its engineers estimated that the cost of this method is about half that of installing heated enclosures.

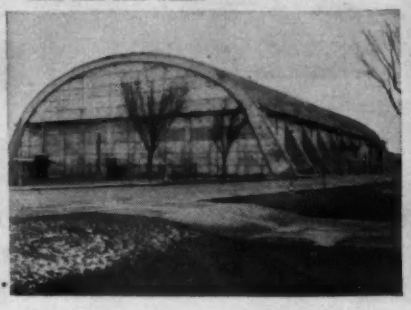
Balsam-Wool has been used to insulate concrete forms in many important projects, including the Pennsylvania Turnpike, Maine bridges and Jet Cell concrete buildings at Chanute Air Force Base, Illinois.

Contractor experience shows that this method has superior advantages. The efficient Balsam-Wool® insulating mat is completely enclosed with tough asphalted fibers and is sealed against wind, rain, sleet and snow.

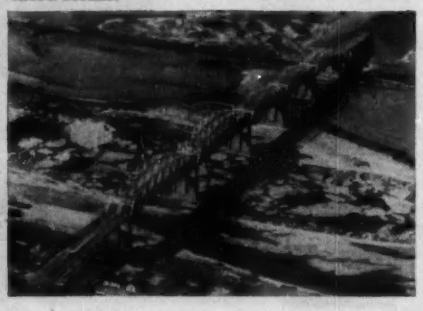
Balsam-Wool insulated forms were used in the construction of piers of this Missouri River bridge during the winter of 1952-53.



Winter work on this hippodrome building in St. Paul, Minnesota, was speeded with Balsam-Wool insulated forms on ends and side walls.



Expensive plywood and tarpaulin were eliminated on this bridge pier construction by the use of Balsam-Wool insulated forms.



Temperature record being taken with a testing thermometer inserted through insulated form into a 6" deep well provided in the concrete. A maximum-minimum thermometer registers high and low temperature during 24-hour period.

Here's what project engineers say about Balsam-Wool insulated forms*

"...a fine job of insulation at outside temperatures of below 6°, it proved very economical in its initial cost as well as in its continued re-use."

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*Names on request

A field representative will gladly provide complete information about Balsam-Wool concrete insulated forms—including abundant statistical evidence. Just mail the coupon.

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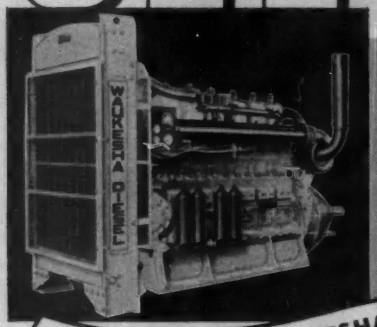

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grams, he pointed out that "passive interest" is no good.

Porter views the foreman as probably the most important man in the accident-prevention picture. For he is on the firing line where the work is done. He can stop the man who is taking unnecessary chances.

• **New officers**—Robert L. Jenkins, chief of the Safety Division, Corps of Engineers, Washington, D. C., was elected general chairman of the Construction Section of the National Safety Council. He succeeds Geo. P. O'Rourke, Sr., president, O'Rourke Construction Co., Dallas, Texas. Wm. G. Hawkins, insurance Manager and Safety Director, Winston Bros. Co., Minneapolis, was named vice-chairman; John L. Junkert, safety engineer, Marsh & McLennan, Inc., Minneapolis, was named secretary; and E. N. Ziner, safety engineer, John A. Volpe Construction Co. Inc., Boston, was named assistant secretary.

Designer Picked by Lot For Local AGC Building

An architect was chosen by lot as one solution to a ticklish public relations program faced by the Southern California Chapter of Associated General Contractors when the local AGC group needed a designer for its soon-to-be-started $100,000 headquarters building in Los Angeles.

"Being an association of contractors who work constantly with scores of architects, the AGC wanted to make a completely impartial selection," chapter president Carl H. Wittenberg said.

The one chosen was Charles O. Matcham, past president of the Southern California chapter of the American Institute of Architects, and general chairman of the 1956 AIA convention.

"While the idea of picking an architect by lot certainly is not the most practical means nor a recommended one," Wittenberg said, "the committee felt it had no alternative. The problem was similar to the one we now face in selecting a contractor to erect the structure."

Port Commission Named

The Warren County, Miss., Board of Supervisors has named a five-man port commission to co-ordinate planning and development of the Vicksburg-Yazoo Project, a plan for a 250-acre fill to provide more river front industrial sites and public terminal facilities. The project will be developed jointly by Warren County, the Mississippi River Commission, and the Army Corps of Engineers.

EVERY TIME THEY PRESS THE BUTTON AND TALK, THEY SAVE $ $ $ $ $ $

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Key to a savings of many dollars each day are the Motorola mobile 2-way radio units in cars and pick-up trucks used by personnel of the Yonkers Contracting Co. in the construction of sections of the New York State Thruway. Every time one of the engineers, superintendents or foremen presses the button and talks, he saves a *minimum* of 15 minutes—in time required to travel to another site to: *find equipment needed elsewhere—find a mechanic to make repairs on a truck—make arrangements for the next day's work—hold a conference—report unexpected trouble—ask for fill—locate project manager, chief engineer or coordinating superintendent—ask the main office to rent another piece of equipment or purchase parts not in stock.*

But 15 minutes saved per call is only the minimum. Over the radio "party-line" it is possible to get the answers and make decisions that would have taken hours otherwise. In brief, there are as many reasons to use 2-way radio as there are questions to be answered each day, shifts to be made in personnel or equipment, and "emergencies" to be handled without delay. Yonkers Contracting Co. personnel average between 200 and 300 calls per day. It's easy to see why Arthur Cipolla, chief engineer, says that they don't know what they would do without 2-way radio, that they have forgotten what it was like to supervise a large construction job without this modern form of communication.

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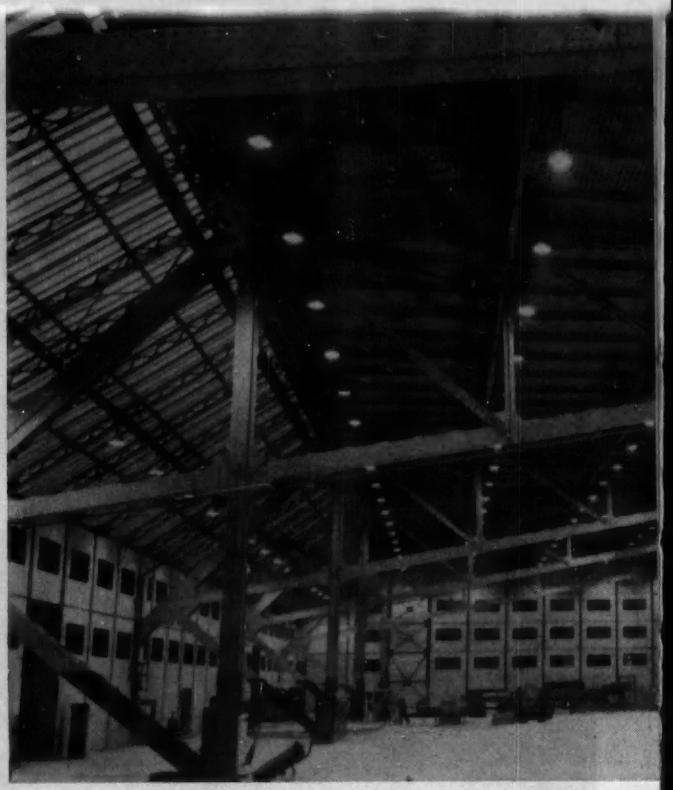
Paris Modernizes its Orly Airfield With . . .



LONG CANTILEVERS of Orly hangars provide unobstructed

Big Hangars and Prestressed

Waldo G. Bowman
Editor
Engineering News-Record

Continuing to work to their plan to make Paris' Orly Airfield one of the largest and most completely equipped airports in the world, French engineers have completed two new facilities that have more than the normal amount of technical significance.

One is a pair of hangars totaling 1,247 ft in length framed with steel cantilever trusses that provide a hangar depth of 148 ft and a free height, at the doors, of 50 ft.

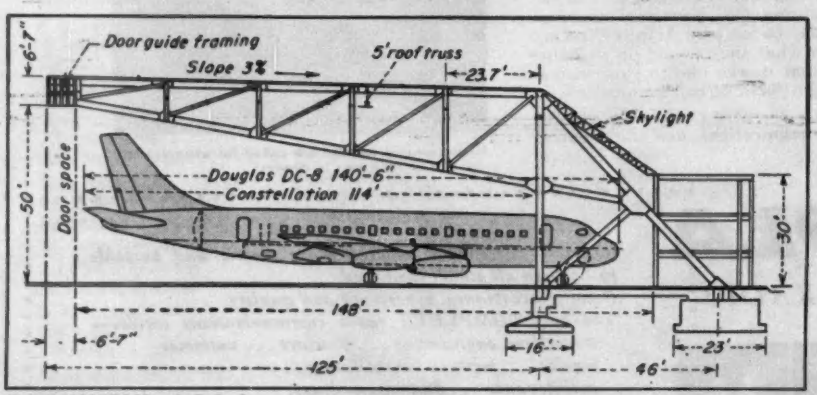
The other is a pre-stressed concrete taxiway, 1,400 ft long, 82 ft wide and only 7 in. thick in which the longitudinal prestress was applied by inflating so-called "flat jacks" installed in joints in the pavement at the mid and quarter points of its length.

Both of these facilities are noteworthy in their particular field, and the success of the taxiway has already resulted in the same method being used for the construction of an entire major runway at the Maison Blanche Airport in Algiers, in North Africa.

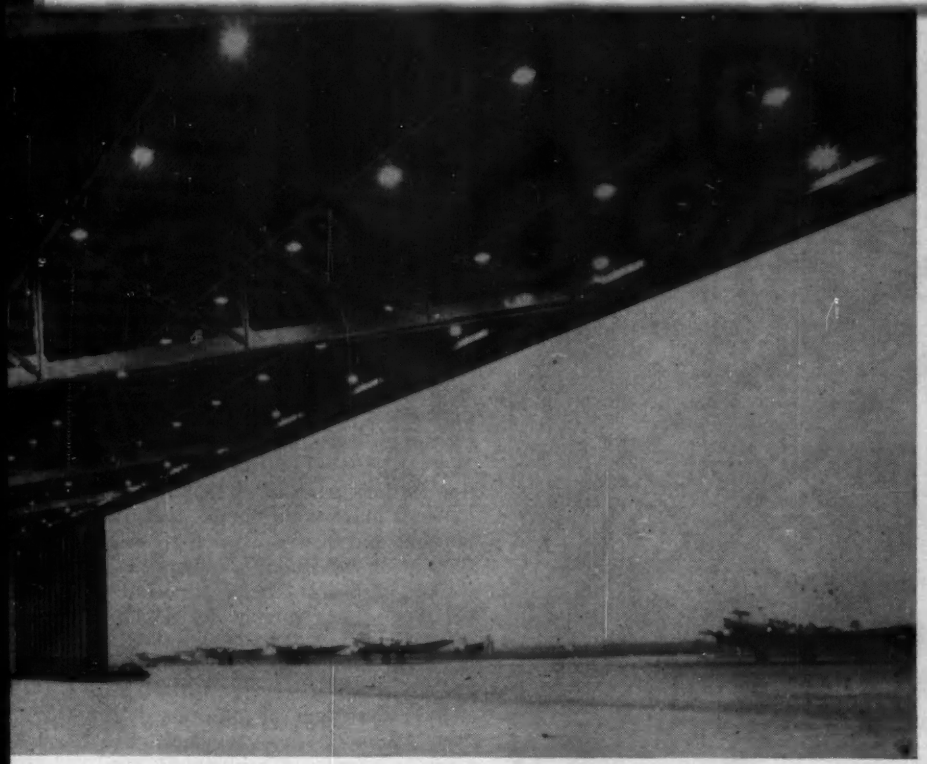
• **Working to a master plan**—Orly airfield has been undergoing constant rebuilding for the past ten years, or since it was taken over in a thoroughly destroyed condition from the Germans in 1945. Up to now, except for one entirely new runway, work has been of a rehabilitation nature, and most structures have been temporary or semi-permanent. During the same period, however, a master plan has been drawn up, and its progressive development begun.

A map of this master plan covers a large part of one wall in the office of Pierre D. Cot, director general of the Aeroport de Paris, the organization charged with the development and administration of all the civil airports of the Paris region. And even though M. Cot knows the map by heart—he was, first, engineer of Orly and then its director before assuming his present top job—he spends as much time studying it as on all of his other duties combined. This is because, says M. Cot, the master plan is not only his planning and budgeting guide, but is still subject to any changes that new data on European air traffic development may dictate.

So far, however, no basic changes have had to be made, and the new hangars and the prestressed taxiway have conformed to the original plan. M. Cot's current problem is to arrange for the expansion of the field to more than double its present size so that a start can be made on the enlarged



DIMENSIONS of Orly hangars are great enough to permit housing the largest commercial planes now and for many years in future. Douglas DC-8, largest yet planned is type that Pan American Airways recently contracted to buy.



floor space which is made continuous with outside apron by wall-size rolling doors.

RAISING A DOOR into position as seen from the guide beams 50 ft above, which will give it horizontal support.

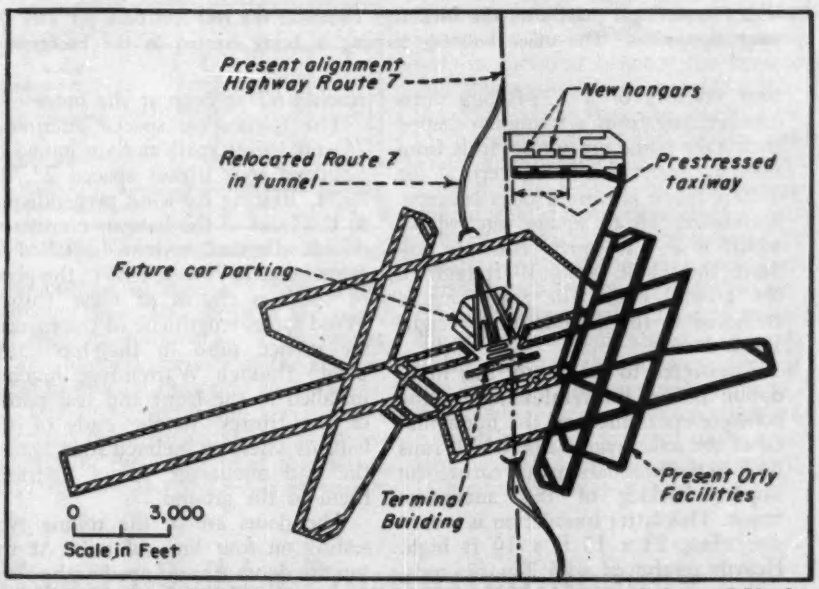
Taxiway

runway and building layout. As shown on the accompanying map, the dividing line between this additional land for Orly and the part now in use is national highway route No. 7, main road from Paris to the south of France. Until this busy traffic artery is placed in a tunnel, expansion of the field to the west cannot take place.

This operation is the next major step in the modernization plan, because until it is done the remaining and most extensive part of the air terminal building cannot be built.

The part of this building to the east of Route 7, to be used ultimately for one of two freight departments, for offices and for passenger plane loading facilities, was completed last year, and will be used as a passenger terminal until the approximately other three-quarters of the structure can be built.

The facilities that have been installed temporarily in the part of the building now completed are designed to handle a million passengers a year. That was about the pessenger volume that passed through Orly's old air terminal building last year. The fact that this latter terminal was built in 1947 to accommodate eventually only about half that number explains the decision to build a part of the new terminal building now and use it temporarily for passenger service.



MORE THAN DOUBLE the area of the present Orly layout will be available for expansion as soon as National Highway 7 is placed in a tunnel beneath the field.

• **New hangars**—In the master plan, the industrial area of the field is sited at the north edge of the layout adjacent to highway route 7, where some maintenance and repair hangars rented to Air France already exist. It is along the same alignment as these old hangars that the two new hangars have been built.

The two hangars, of flat roof type, as shown in the head piece illustration are identical except in length, the larger being 712 ft long, the smaller 535 ft. Since they are both 148 ft deep from doors to rear walls, they can shelter completely the largest commercial planes now in existence, and are believed to be adequate for any which will come into use during the next thirty years. The fronts of the hangars are entirely given over to doors, while tier-framed shops and office buildings surround the other three sides.

The hangars are most notable for their cantilever framing, which is simple but relatively massive. Each

ERECTION of the 125-ft cantilever arms in one ground-assembled piece was done with two steel gin poles after the anchorage frames at the rear had been set with the same equipment. The office building framing is being erected in the background.

bent consists of a 125-ft-long truss cantilevering from a triangular-shaped anchorage frame measuring 46 ft from front to rear. The front, vertical leg of this frame is carried on a concrete foundation 16 ft square, on top of which is a 3 ft square concrete column, the whole being 10 ft high to the ground line. The frame leg is anchored to this foundation by eight 1¾-in. dowels.

Connected to the top of this foundation is also the reinforcing for the concrete encasement of the horizontal tie of the anchorage frame which runs back to the foundation that carries the sloping backleg of this anchorage frame. This latter foundation is a massive affair, 23 x 15 ft x 10 ft high. Heavily reinforced with 2-in. dia rods, and containing 16 anchorage dowels of 1⅞-in. dia, each of these foundations weighs 200 tons.

The steelwork of the cantilever bents of the hangar framing consists of built-up box members—all plates in the more heavily stressed parts, of plates and lacing elsewhere. The largest members are 30 x 20 in.—being the sloping backleg of the anchorage frame and the member in this frame which is a continuation of the bottom chord of the truss. The truss chords have dimensions of 20 x 20 in. The truss is 24 ft deep where it is joined to the anchorage frame and reaches 6.5 ft deep at the outer end.

The frames are spaced alternately 76 and 102 ft apart and are joined by 5-ft-deep roof trusses spaced 23.7 ft apart. Bracing for wind perpendicular to the front of the hangars consists of double diagonal systems installed in every other 76-ft-wide bays in the plane of the top chords of these trusses. Wind forces lengthwise of the hangars are carried (also in the top chord plane) through Warren-type bracing, installed in the front and rear panels of the trusses, to the ends of the hangars where an inclined strut against the end anchorage frame transmits them to the ground.

The doors are of the rolling type resting on four lines of rails. At the top the doors are equipped with rollers set vertically to move along between guide beams suspended from the ends of the cantilevers.

Each door is 50 ft high and 89 ft long. For the 712-ft hangar, there are thus eight of these doors, and two of them run on each of the four lines of rails. For erection purposes each door is divided into halves, of full height, but only 44½ ft long. Although made up of hollow members fabricated from plates only ½-in.-thick, each of these half doors weighs 30 tons.

Each half door is equipped with two double-flanged wheels at the bottom and two rollers at the top. One of the bottom wheels is geared to a 3½-hp electric motor. For each full door, therefore, there are two operating motors, and they operate synchronously from the same controls. The bottom 3 ft of the doors is flared out to a thickness of 17 in. to accommodate these motors. This is the same thickness as the vertical mullions that divide the doors into 7 ft wide panels but the actual thickness of the panels themselves is only a little over 1 in.

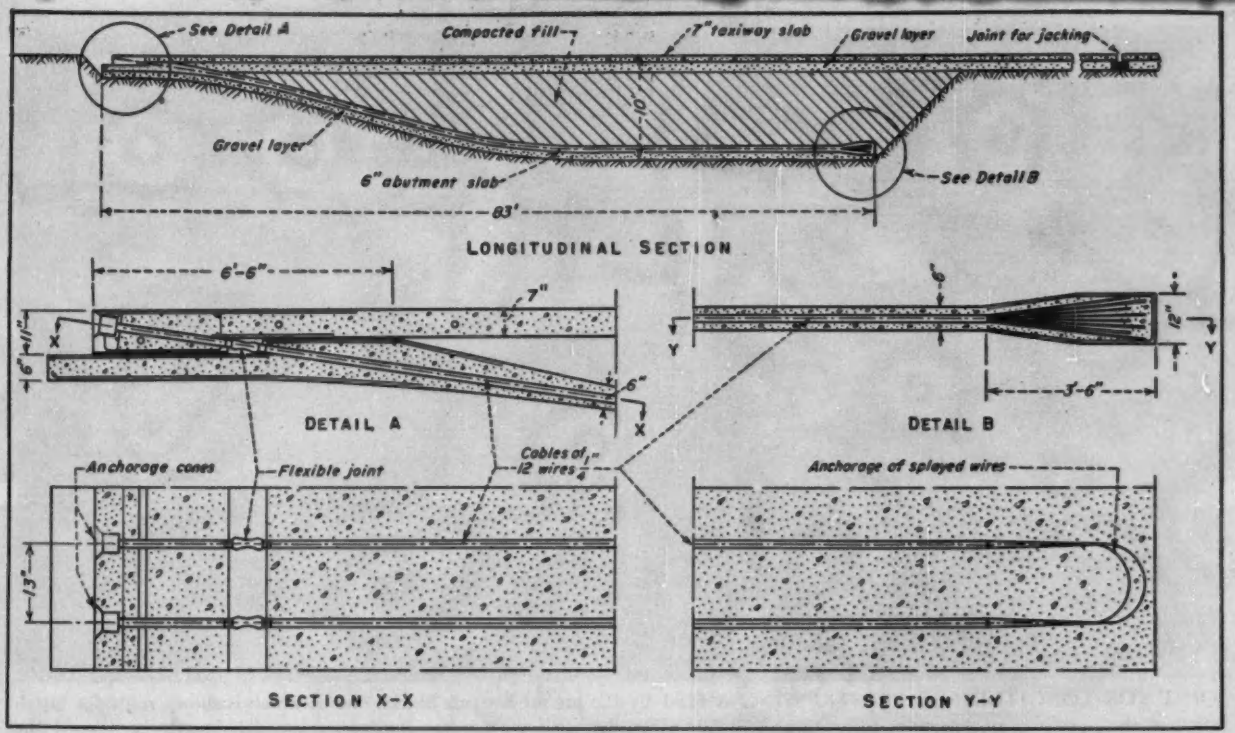
• **Prestressed taxiway**—A section of prestressed runway was constructed at Orly some years ago (ENR Sept. 16, 1948, p. 104), but the method used —squeezing triangular shaped slabs between massive abutments—was complicated and costly. Moreover, while the runway has stood up quite satisfactorially, it has not been subjected to the type of heavy traffic for which it was designed, so that its real capabilities are unknown.

Convinced, however, of the theoretical advantages of prestressed airport pavements—less thickness than plain or reinforced concrete, a minimum of crack trouble and no contraction or expansion joints—the French government engineers, in collaboration with E. Freyssinet and the constructing firm of Campenon Bernard, the prestressed concrete expert, worked out a simpler, less costly construction procedure, and put it to test on a taxiway 82 ft wide and 1,400 ft long.

Located parallel to the apron in front of the new hangars, the taxiway will be subjected to all of the heavy plane traffic going to and from this servicing area. Extensive load tests made after its completion have led to the conclusion that it can carry an unlimited amount of traffic of the 60-ton wheel load type and a moderate amount of 100-ton traffic.

The taxiway slab is only 7 in. thick, and it was prestressed both transversely and lengthwise. The transverse prestress, 260 psi after losses from concrete shrinkage, steel relaxation, etc., was created by transverse cables spaced at 3-ft 8-in. intervals along the pavement. The cables are made up from twelve ¼-in. wires of a steel having an ultimate strength of 200,000 psi.

But it is the method used to obtain the longitudinal prestress (also 260 psi) that gives the taxiway its novelty. This was done by inserting three so-called flat jacks—inflateable dumb-bell shaped tubes of light gage metal—in each of three joints across the pavement, located at the mid and quarter points of its length, and thus 350 ft apart. When these jacks were inflated with water they compressed the pavement slab between abutments constructed at either end. The three jacks



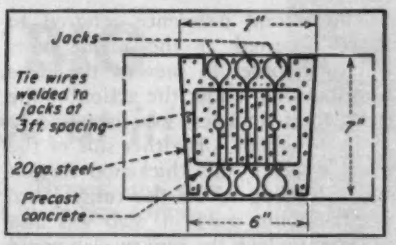
ABUTMENT FOR LONGITUDINAL PRESTRESSING consists of a slab buried under the end of the taxiway and connected to it through prestressed steel wire cables. Resistance to longitudinal forces is provided by the friction between the abutment slab and the ground, and the friction is considerably increased by the weight of the superimposed compacted fill.

were pre-assembled side by side in an encasement of lean concrete to provide a unit that could readily be installed in a joint.

The abutments also contribute to the novelty of the longitudinal prestressing methods because in principle they are merely a continuation of the taxiway slab turned back beneath itself as shown in the accompanying drawing. This type of "elastic" abutment was developed to overcome the disadvantages of heavy fixed abutments under variation in temperature and humidity. With fixed abutments these variations create substantial changes in the longitudinal prestress as well as very large thrusts on the abutments themselves. The elastic abutment can follow the movements of the taxiway slab and at the same time induce a relatively uniform prestress in the slab.

Each abutment consists of a 6-in. slab, the same width as the pavement and 84 ft long, sloping downward under the pavement until it attains a depth of 10 ft. This abutment slab is covered with a compacted fill, increasing its dead load and thus its friction in resisting the push of the prestressing forces.

These forces from the taxiway slab are transmitted to this buried slab abutment by cables (also of twelve ¼-in. wires) encased in metal hose to prevent bonding with the concrete and spaced at 20-in. intervals. Each cable runs the length of the abutment slab and back again, being looped at the bottom to furnish a bonded anchorage there, and with the two ends, at the top, terminating in Freyssinet cones in the extremity of the taxiway slab to provide the other anchorage.



FLAT JACKS for longitudinal prestressing.

The anchorage at the lower end is effected by removing the metallic enclosure in the last 3 ft of the cables, and splaying out the wires to permit them to bond to the concrete. The cables are covered with a neoprene hose in the joint between the taxiway and abutment slabs to provide a flexible connection that can adapt itself to the movement of the taxiway slab under longitudinal prestressing.

Such a large series of tests accompanied the construction of this prestressed taxiway and followed its completion that the engineers were satisfied that they had found a practicable and economical method to utilize the advantages of prestressing in pavements. Accordingly, almost as soon as the work at Orly was finished, an entire runway at the Maison Blanche Airport in Algiers was put under construction. Its construction is described in the article which follows.

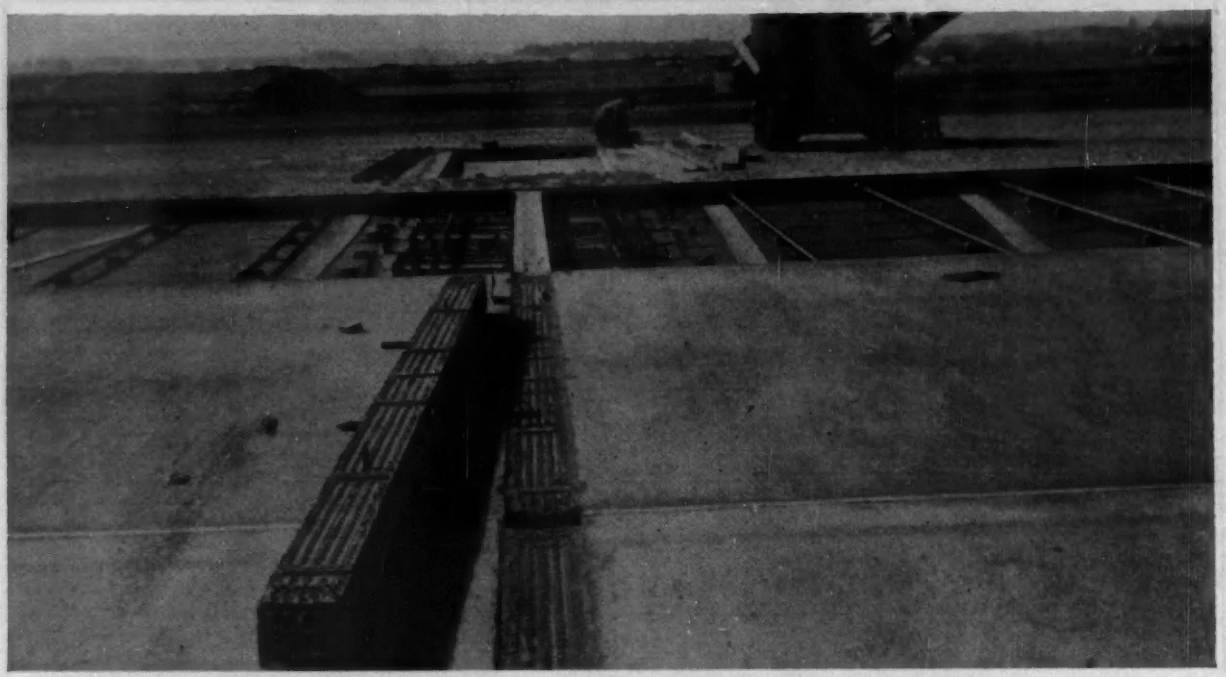
How to Build a Prestressed Runway

The following information on the methods used in constructing the world's first prestressed concrete runway was supplied by Niels Thorsen of the Freyssinet organization's U. S. office and based on an article in the July, 1955 issue of the French magazine, Travaux.

Immediately following the success of the 1,400 x 82 ft prestressed concrete taxiway at Orly Airport in Paris, decision was made to utilize the same design and construction procedure for a much larger project at the Maison Blanche Airport in Algiers, North Africa. Included was a prestressed runway 8,000 x 200 ft, and a parallel prestressed taxiway 7,700 x 82 ft, the two being connected by two cross taxiways 850 ft long in ordinary concrete. And although all of the pavements were designed for the same concentrated load (200,000 lb on a 30 in. diam circle), the prestressed slabs were made only 7 in. thick while those in ordinary concrete had a total thickness of 15½ in.

As at Orly the prestress requirement

New Maintenance Hangar



JOINT FOR LONGITUDINAL PRESTRESSING is filled by the precast flat jack blocks, one of which is shown ready for installation in the next strip of pavement to be placed. Inflating the flat jacks with water compresses the slab lengthwise toward the abutments. Note in this strip the metal tubes across the forms for the transverse prestressing cables.

was 260 psi, both transverse and longitudinal; the transverse prestress was supplied by cables of twelve ¼-in. wires pulled to 130,000 psi; the longitudinal prestress was developed by preassembled units of Freyssinet flat jacks inserted in transverse joints in the runway; and the longitudinal reaction was provided by abutments at either end of the runway of the frictional buried slab type.

Four flat jacks, instead of three as at Orly, were used in each joint, and the joints were spaced 1,000 ft apart. Also the abutment slabs were larger than at Orly—185 ft long and 20 ft wide.

More important than these differences from Orly, however, were two others related to the transverse joints in the pavement at Maison Blanche. Thus, in addition to those at 1,000 ft intervals, temporary joints were also put in at 300 ft intervals. These were also equipped with flat jacks, which were inflated just as soon as the concrete had set in order to induce and hold a slight compression until the final prestressing at the main joints could be carried out after the entire runway was in place.

The purpose of this temporary compression was to prevent the formation of cracks from tensile stresses set up by shrinkage of the concrete and temperature variations. Although such cracks would close after the final prestressing, it was deemed desirable to prevent their occurrence since the slab might move vertically at their locations prior to prestressing, or dirt might get into them, preventing their closing during the prestressing operation.

The second difference referred to above occurred at the main joints where, in order to prevent the slabs from buckling under the action of the jacks, their thickness was increased to 15 in. for about 3 ft either side of the joint. Beneath this thickened section and extending across the runway under the joint, a 3½ in. slab was also placed on which the runway slab could slide when it was prestressed.

• **Building the abutments**—Construction began with the abutments while runway grading was still in progress. After excavation for an abutment, an 8-in. layer of bank-run material was placed, and on this the prestressing cables were installed on blocks that would hold them at mid-height of the slab.

Each of these cables is twice as long as the abutment slab, that is, it runs from the upper end (where it is later attached to an anchorage cone in the extremity of the runway slab) down to the lower end where it is looped and brought back to the upper end for attachment to another anchorage cone. In the loop the metal hose in which the cables are enclosed was cut away so that the wires could be splayed for bond with the concrete.

The abutment slab, lightly reinforced transversely with steel rods, was then cast in 20-ft strips. The fill over the slab was placed and compacted in thin layers to assure maximum density.

After runway grading was complete, steel forms for 20 ft wide strips of slab were set, and about 1½ in. of sand placed as a leveling layer. This was then covered with paraffined paper to assure a low friction coefficient for the slab. Holes in the side forms assured the correct spacing of the metal hoses for the transverse prestressing cables.

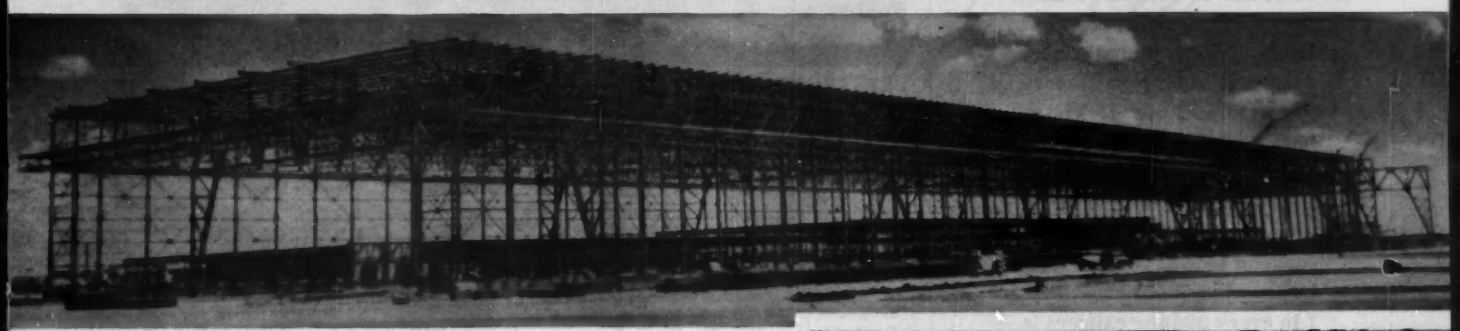
The concrete mix, designed for a 28-day cylinder strength of 5,000 psi, contained 6 bags of cement (similar to Type I) per cu yd and utilized aggregate of 1½-in. maximum size. Central batching and a 55-yd per hr paving mixer were used. The concrete was placed by a mechanical spreader followed by three vibrating screeds. Immediately after finishing, the slab was broomed with nylon brushes and treated with a curing compound to protect it from the 100 deg heat of the warmer construction season.

Except for the slab thickening operation required at the main transverse joints every 1,000 ft, paving operations differed little from those used for any concrete slab. Since the jacks were assembled in a precast block of concrete, they could be set in place much as a premoulded joint would be.

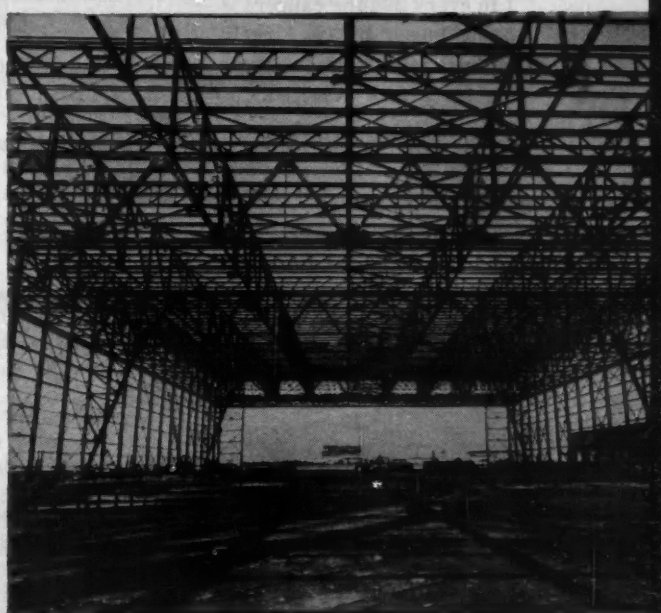
• **Temporary prestressing**—As soon as the side forms were stripped the flat jacks in the temporary joints (at 300 ft intervals) were inflated under a water pressure of 210 psi, the maximum possible at mean air temperature without creating a thrust that would exceed the

(Continued on page 40)

New Maintenance Hangar
KELLY AIR FORCE BASE
San Antonio, Texas



Whopping BIG
any way you look at it!



FABRICATED and erected by AMERICAN BRIDGE, the new repair hangar at Kelly Air Force Base, near San Antonio, is the world's largest.

The main repair hangar is 300 ft. wide x 2000 ft. long x 91 ft. high to roof. The framework for this giant consists of 50 double-cantilever trusses 398 ft. long x 24 ft. deep, spaced 36 ft. apart, center-to-center. Each is composed of a center anchor span of 250 ft. and two 74-ft. cantilever spans.

The roof of this main aircraft repair hangar is supported on 10 rigid truss frames 298'-3" long x 24'-9" deep, spaced 250 ft. apart, center-to-center, composed of parallel-chord trusses and two triangular legs which are 66 ft. high x 23 ft. wide at the top. The weight of the structural steel used in this building is 9,374 tons.

The adjoining Maintenance Shops Building is 250 ft. wide x 1650 ft. long. 2,876 tons of steel went into its construction.

In addition to the above main structures, American Bridge fabricated and erected the steelwork for the Boiler House—52 ft. x 80 ft. x two levels of framing; as well as the Pump House—44 ft. x 44 ft.

American Bridge is very proud of its role in helping the United States Air Force expand its air field facilities. Over the years American Bridge has fabricated and erected the steelwork for more than a score of buildings for smaller hangars and other Air Force buildings throughout this country and elsewhere.

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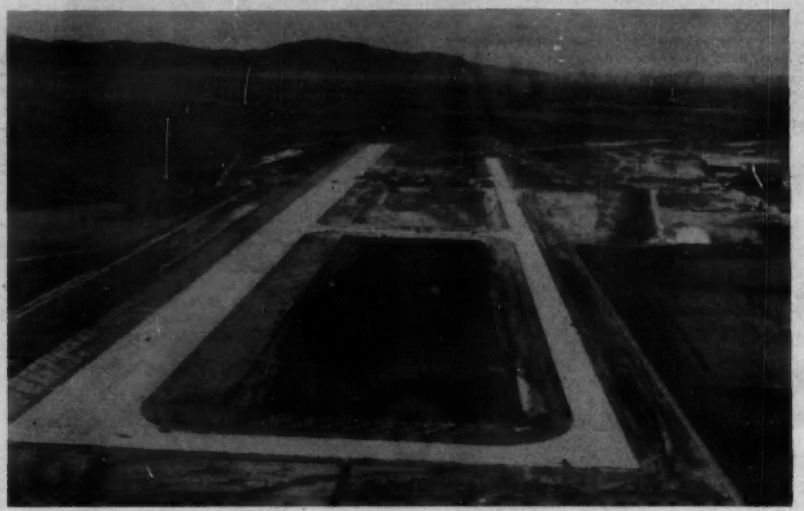
But why MEN over 45?

Our doctors still don't know *why*, but if you are a man over 45 you are six times as likely to develop lung cancer as a man of your age twenty years ago. They *do* know, however, that their chances of saving your life could be about *ten times* greater if they could only detect cancer long before you yourself notice any symptom. (Only 1 in every 20 lung cancers is being cured today, largely because most cases progress too far before detected.)

That's why we urge that you make a habit of having your chest X-rayed every six months, no matter how well you may *feel*. The alarming increase of lung cancer in men over 45 more than justifies such precautions. Far too many men die *needlessly!*

Our new film "The Warning Shadow" will tell you what every man should know about lung cancer. To find where and when you can see this film, and to get life-saving facts about other forms of cancer, phone the American Cancer Society office nearest you or simply write to "Cancer"—in care of your local Post Office.

American Cancer Society



PRESTRESSED RUNWAY AND TAXIWAY in Algiers were built by the flat jack, elastic abutment method pioneered at Orly Airfield in Paris. Eight thousand feet long, the prestressed slabs are only 7 in. thick.

friction forces and thus dislocate the slabs. Adjustment of this pressure was made during the day, raising it if higher air temperatures caused the slabs to expand, dropping it if lower temperatures occurred. The total shortening of the slabs taken by these temporary jacks for the 8,000 ft length of runway was 20 in.

Removal of the side forms left a small lip of concrete at the top edge of the slabs, which was cut off by saws to furnish a smooth surface against which the adjacent slab could be poured. Nevertheless, shrinkage opened these longitudinal joints between the slab strips, and to prevent dirt from entering prior to their being closed by the application of the transverse prestress, the joints were covered temporarily with tape about 1½-in. wide.

• **Transverse Prestressing**—As soon as the entire runway was in place the cables for the transverse prestress were inserted in the preformed holes and pulled by Freyssinet jacks at both ends, and then held by cone anchorages. Pulling was necessary for the runway because of its 200 ft width.

For the 80 ft wide taxiway constructed subsequently, jacks at one end of the cables were sufficient to furnish the necessary prestress.

All the transverse cable holes were grouted after prestressing was completed.

• **Longitudinal Prestressing**—The first step in the longitudinal prestressing operation was to stress the cables in the abutments. In order to cut down secondary stresses this prestressing was done by first pulling every eighth cable and repeating the procedure for eight passes until all cables were in tension to such an amount that a compression of 745 psi was placed in the runway slab.

This amount of slab compression at the abutment was fixed from the fact that under the temperature variations assumed in the design—from 32 to 112 deg F—the compression stresses midway between the abutments can vary, after taking friction losses into account, from 260 to 1,230 psi. The mean of these extremes is 745 psi, which made this the required prestress at the abutments.

The jacks in the main joints were then inflated to the pressures required to produce this final prestress. When the jacks are inflated the result is a maximum stress at the joints and a minimum stress midway between them, but after a period of time the stress throughout the length of the slab tends to become uniform. Since some of this adjustment results from the fact that the coefficient of friction becomes less under long time loading, the pressure was maintained on the jacks for a full week. Due to the elasticity of the abutments the stresses in their vicinity remain almost constant at all times.

During these prestressing operations at the main joints the jacks at the temporary joints were removed one by one, and the joints filled with mortar.

As a final operation the flat jacks were injected with grout to keep them in extended position. Actually only one jack of the four in a unit at each joint was used for the prestressing, and thus was filled with grout. Two of the other jacks will be used for stress adjustments during the first year the runway is in operation. The fourth jack is kept in reserve for adjustments later on.

The runway at Maison Blanche has now been in operation for months.

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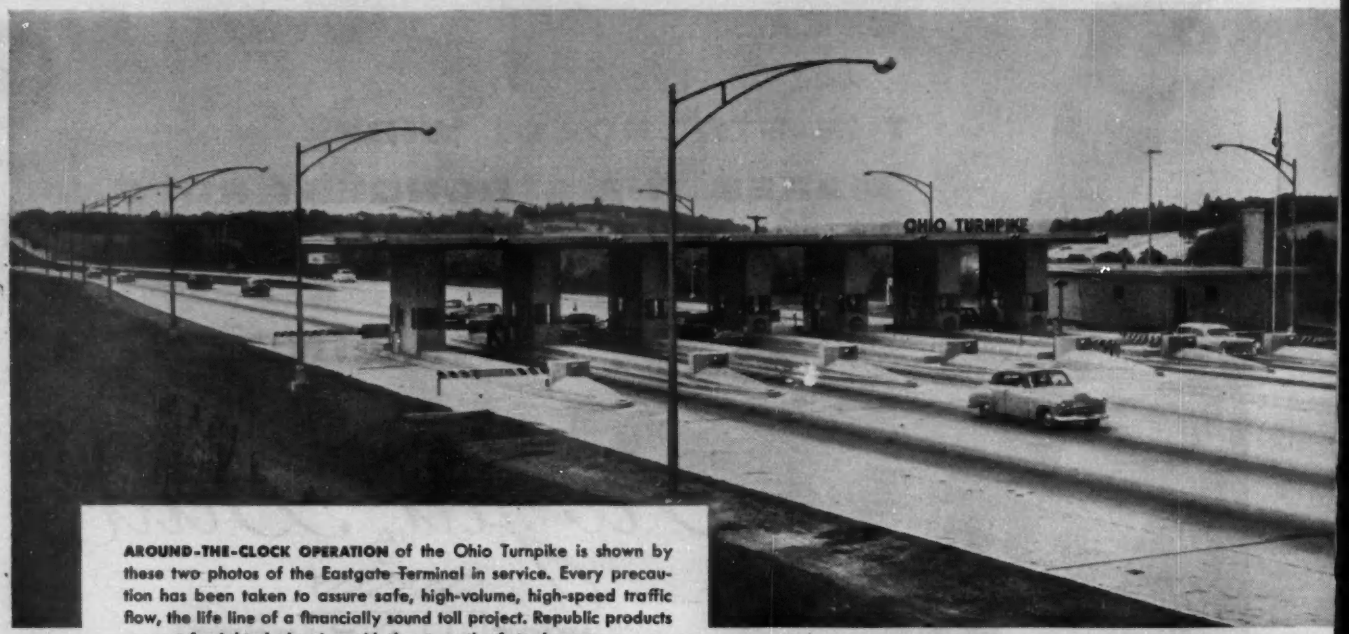
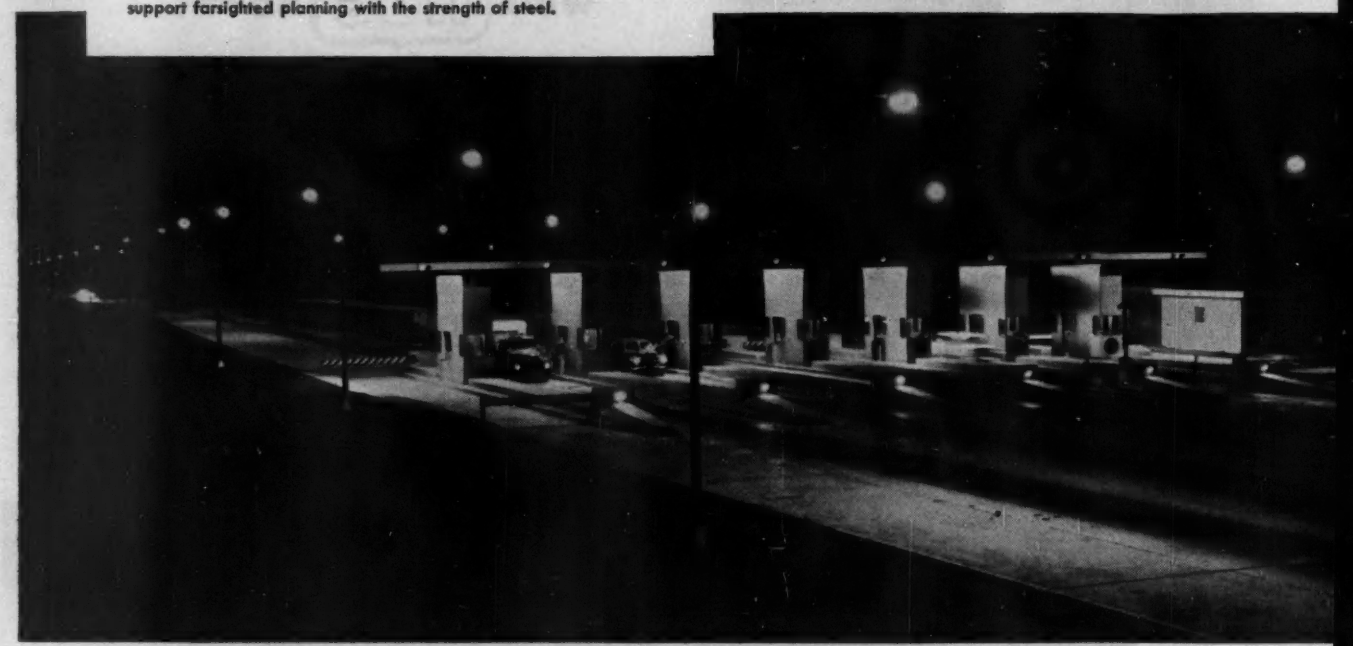


AROUND-THE-CLOCK OPERATION of the Ohio Turnpike is shown by these two photos of the Eastgate Terminal in service. Every precaution has been taken to assure safe, high-volume, high-speed traffic flow, the life line of a financially sound toll project. Republic products support farsighted planning with the strength of steel.



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Around the clock . . .

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Ten years, and an estimated more than 43,000,000 vehicles later, the story should still be the same. The Ohio Turnpike was built to last.

As a major supplier, Republic is proud of its contribution to this gigantic project. In the new road and over and under it, Republic products stand guard against the continuous assault of the elements and a punishing traffic load. From reinforcing bars, welded wire fabric, structural sections, and steel windows furnished by the Truscon Division, to drainage structures and bolts and nuts, Republic matches quality of product to exacting, highway engineering standards. The result is a road—and auxiliary service facilities—capable of handling an enormous cargo and passenger volume with extremely low maintenance requirements.

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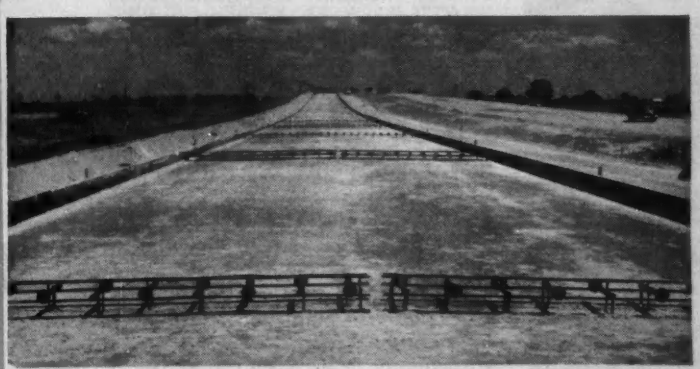
PROTECTION AGAINST WATER DAMAGE is provided by Republic's rust-resistant Toncan® Iron Sectional Plate Pipe and Corrugated Drainage Pipe, installed in many critical areas. The 72-in. diameter, 748-ft. long, sectional structure shown being installed, will not be affected by impact, vibration, shifting soil or severe weather changes. Precision fabrication allowed fast, economical erection. Completed structure was covered with fill ranging from 73 to 78 feet in depth.



PROTECTION AGAINST TEMPERATURE CHANGES is provided by these Truscon-furnished expansion joints in the completed roadway. All preparations were ready at this point for the paving "spread" to move in. Once underway, *nothing* was allowed to delay the "spread" . . . creating a giant problem in logistics. Republic helped by delivering every order for turnpike steel in good condition and on time.

PROTECTION AGAINST POUNDING TRAFFIC is secured with concrete reinforcing bars, furnished by Republic's Truscon Division. These bars, shown on one of the big road's 252 overpass structures, weave a pattern of strength to form the backbone for an enduring surface. In the turnpike itself, Truscon-furnished, welded wire fabric works to shrug off the hammering of modern, heavy, high-speed vehicles.

State Prison:

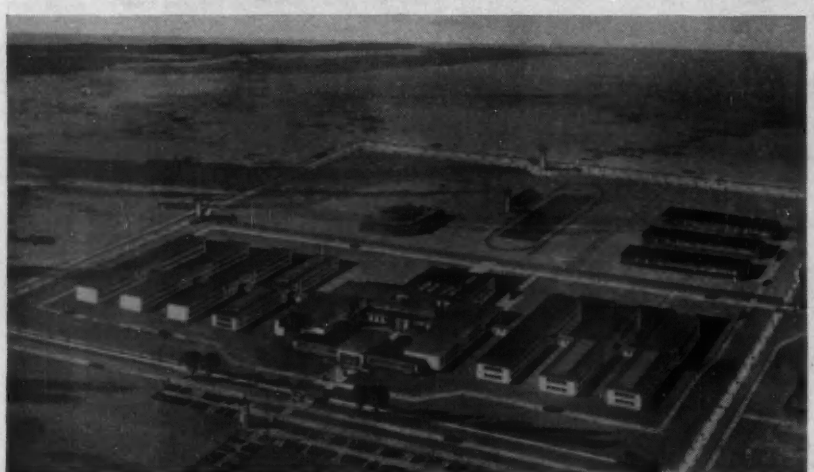
Duplication of facilities offers contractor opportunity to save time, labor and money as . . .

Reusable Forms Expedite Erection of

Cold concrete walls, windows barred with massive steel gratings, and remote-control locking devices create an atmosphere of solid security to New Mexico's new penitentiary, even during construction. When the project is completed late this year or early next year, its inmates will be the reluctant beneficiaries of an unusual amount of painstaking design and construction required to provide the latest innovations in safe penal establishments.

From the contractor's standpoint the sprawling group of two-story buildings of reinforced concrete is primarily a forming job. It is also one of repetition. Row after row of cells are exact duplicates, each with its own door and window, and designed to accommodate two inmates. The 6x8-ft by 7-ft high cells have 6-in. and 8-in. reinforced concrete walls. Each pair of cells has a common vertical shaft to accommodate sanitation and utility lines.

• **Panel forms**—It was this duplication of cell dimensions and the tremendous amount of formwork needed per cubic yard of concrete that prompted the contractor to use prefabricated panel forms. Also, he had used the same type of forms on other penitentiaries, with considerable success.



HOW THE PENITENTIARY WILL LOOK when completed—a central administration building flanked by cell block buildings with a contiguous recreational area, all covering a site of 320 acres and enclosed in a double wire fence.

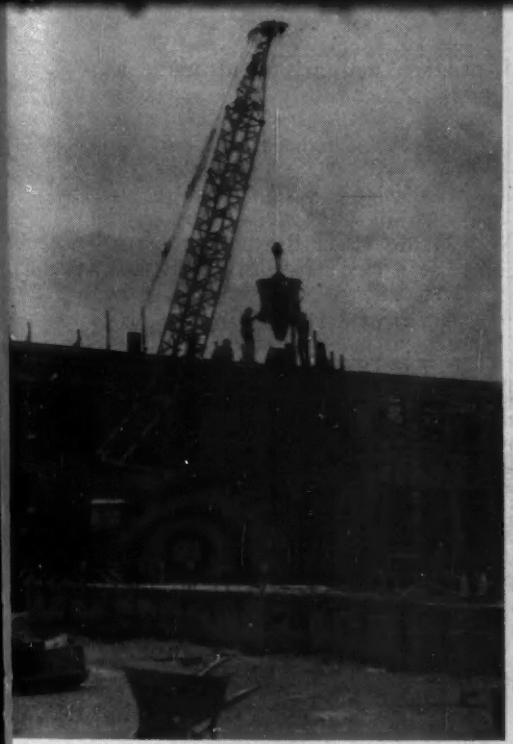
For one thing the job called for a forming system that would be easy to erect and strip, yet produce the required concrete finish. These requirements, together with the small working areas and other special job conditions led to the design of a special set of forms.

The answer was furnished by Universal Form Clamp Co., which combined its standard panel form of ½-in. plywood set in a steel frame, with a five-sided specially fabricated form of 7-ga sheet steel. The result was a set of reusable forms for casting the walls of a pair of cells; including the vertical pipe shaft.

The contractor bought enough of these special forms to construct 34 cells at one time; also about 30,000 sq ft of the standard panel forms for handling the straight-runs provided by exterior and interior walls and corridors.

Even with the special prefabricated forms it takes longer to set them up than to place the concrete—for example 10 days and 2 days for one of the 34 cell units. Moreover, there are only about 200 cu yd of concrete in one of these pours. At the peak of forming operations there were about 60 carpenters on the job.

• **Maximum re-use**—Both the special forming for the cells and the standard forms for walls are re-used to the maximum possible extent. Some panel forms have been reused as much as 32 times, as for example in a 900 ft



Penitentiary

tunnel connecting the eight separate buildings. When the surface of the plywood in contact with the concrete becomes gouged or scuffed due to normal wear or tear, the plywood is removed from its steel frame and replaced with a new piece. And, as a final usage, the old plywood is laid down as treads on temporary stairs.

• **Lightweight concrete**—The concrete used in the penitentiary buildings is made with a lightweight aggregate and weighs about 80 lb per cu ft. It's required compressive strength is 3,000 psi. at 28 days.

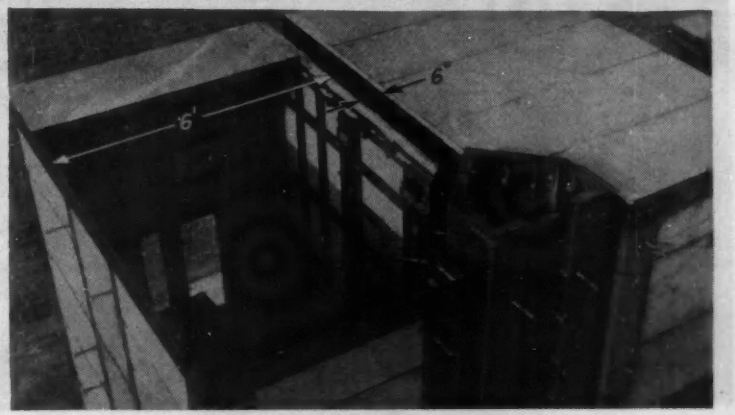
Aggregates and cement arrive by truck at the contractor's batching and mixing plant, set up a short distance from the building site, where they are lifted by front-end loader from stockpile to weighing hopper, then fed into a 1-cu yd mixer at ground level. Concrete is discharged into special 4-cu yd gondola-type dump trucks, hauled to the site and hoisted into place by a crawler crane handling a 1-cu yd concrete bucket.

No speed records have been set in placing concrete, but the objective has been to make it as steady-going a job as possible considering the high winds and dust storms. The contractor has five of these 4-cu yd dump trucks, but three and sometimes only two trucks are needed to keep the concreting crew supplied.

As would be expected for this type of installation, New Mexico's new state penitentiary is a self-contained facility, as far as utilities are concerned. There is one exception. Electric power is received from a commercial high line.

← Such special items are required for this group of concrete buildings as . . .

. . . Steel gratings for windows, and . . .



. . . Steel-framed plywood forms for cells.

• **Water supply**—The penitentiary will get its water from two 700-ft deep wells producing a total of 400 gpm. Pumps are electrically powered, and the system is chlorinated and distributed by gravity.

There are two storage facilities. One is a 100,000-gal elevated water tank, 28 ft in dia. It stands 125 ft high to the bottom capacity line. There is also a 150,000-gal surface reservoir.

• **Sewage treatment**—An Imhoff tank, a trickling filter equipped with a rotary distributing mechanism, two sludge, drying beds, and three oxidationing ponds make up the sewage treatment plant. No chlorine treatment is used in the system.

The sewage treatment plant is designed to serve a total population of 1,200 made up of 1,000 inmates and 200 operators and guards.

• **Heating system**—The power plant for steam generation is located outside the confinement area fences. Steam is fed to the various buildings through an inmate-isolated tunnel system at 125 psi. The various units comprising the group of buildings are heated by forced warm air systems and steam convector systems—depending on the function of each individual unit.

Steam is generated in three water-tube boilers fired with natural gas; with provision for one standby switch-over in case of gas line interruption. The boilers have a total capacity of 21,000 lb of steam per hr at maximum continuous load; with a maximum peak load of 24,000 lb per hr. There is a completely automatic firing control system in the power plant.

• **Temperature control**—Each unit of each building on either side of the full-length main corridor has its own equipment room. These rooms contain pressure reducing valve stations, condensate pumps, automatic tem-

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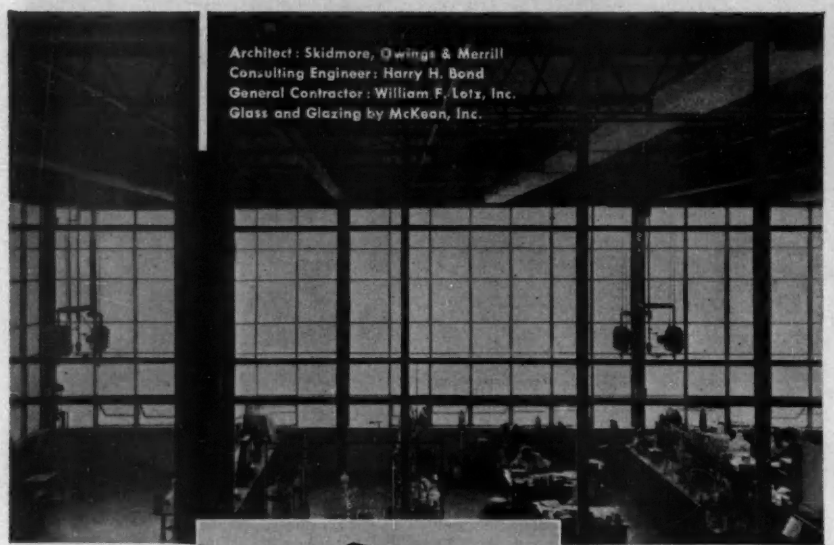
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perature controls, forced warm air vents and coils, hot water generators and an assortment of auxiliary apparatus needed for the heating and ventilating systems.

Temperatures within each structure are controlled by electric or pneumatic apparatus, either through some control devices or individual unit control.

Summer ventilation is provided by power driven exhaust fans, and the movement of air achieves some cooling effect.

• **Air conditioned surgery**—The surgery in the hospital building, including associated areas, is air conditioned. This system includes refrigerated cooling, filtering, ventilation and controlled humidity. Kitchen and dining room also are air conditioned.

• **Security control**—From a security standpoint, one of the outstanding features of the $7.5 million penitentiary is the central control system by which any or all cell blocks can be sealed off in event of trouble.

The central control room is located in the administration building. It is a bay-window like structure jutting into the main corridor. Guards on duty in the control room will be protected by bullet proof glass and heavy steel gratings set in the concrete.

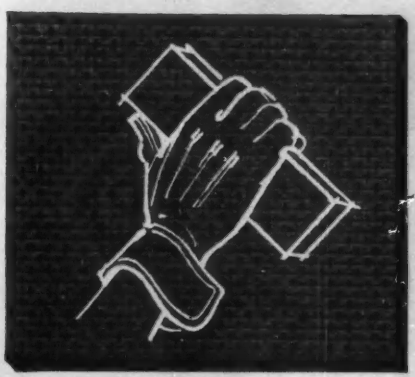
Television may be called on in the future to provide extra safeguards. There is talk of installing a battery of television cameras at inaccessible points in all the cell blocks.

• **Exterior precautions** — To begin with, the entire 320-acre prison area is surrounded with a double line of chain link fencing 10 ft and 12 ft high. Four two-story guard towers are located between the divided fences.

In addition to the fences, there will be a pedestrian entrance building—equipped with a unique "inspectoscope" device for detecting weapons or other contraband hidden in the clothing of a visitor. There will also be a truck entrance or vehicular sally port with "bridge" facilities to permit inspection of vehicles from beneath.

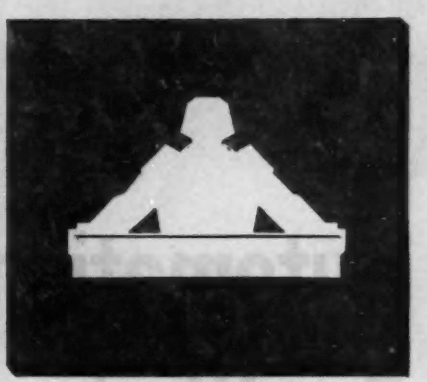
• **Contractors and consultants**—Robert E. McKee General Contractor, Inc., El Paso, Texas is the general contractor on the $7.5 million project. J. R. Brennand is vice-president in charge of the project. Carl G. Taylor was superintendent during the early stages of the work, and W. E. Robertson, assistant superintendent.

W. C. Kruger & Associates, Architects-Engineers, Inc., Santa Fe, are the consultants handling the design and field supervision. Ed. Warnken is inspector.

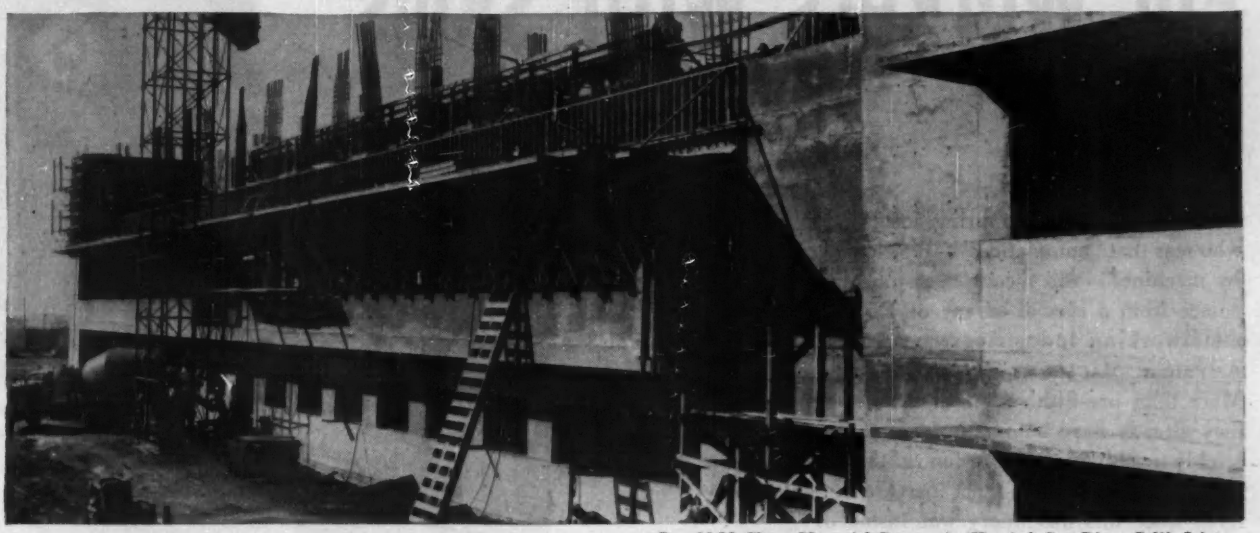


Rubbed

Not Rubbed, Painted



Painted or Unpainted



Donald M. Sharp Memorial Community Hospital, San Diego, Calif. Joint contractors: Guy F. Atkinson Company and Trepte Construction Co., Inc.

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2. Screen side to concrete—for painted surfaces. The textured surface left in concrete forms an excellent bond for paint. Only minimum rubbing required.

3. Smooth side to concrete—for painted or unpainted surfaces. Rubbing virtually eliminated. No knots, grain or blemishes in Masonite Presdwood to mar the finished concrete surface.

You'll stretch its low initial cost over many applications. (Remember, both sides of each panel are usable.) Preparation time is less, too; these large 4′ x 4′ and 4′ x 8′ panels are easy to cut and fit with ordinary tools. They assure uniform hydration with almost no seepage.

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Town.....*Zone*.....

County.....*State*.....

A MESSAGE TO AMERICAN INDUSTRY • ONE OF A SERIES

Automation Creates Jobs For Workers With Skills

There is new and reassuring information for those who fear that "automation" — the control of machines by machines — will mean fewer job opportunities. It comes from a special survey of 1,574 companies in metalworking industries recently completed by AMERICAN MACHINIST, a McGraw-Hill publication. More than one-fifth of the companies reported that they already have automatic loading, transfer or assembly machinery in operation. In these companies as a whole there has been a net increase in total employment since this machinery was installed.

According to the AMERICAN MACHINIST survey, of these companies with actual experience in automation

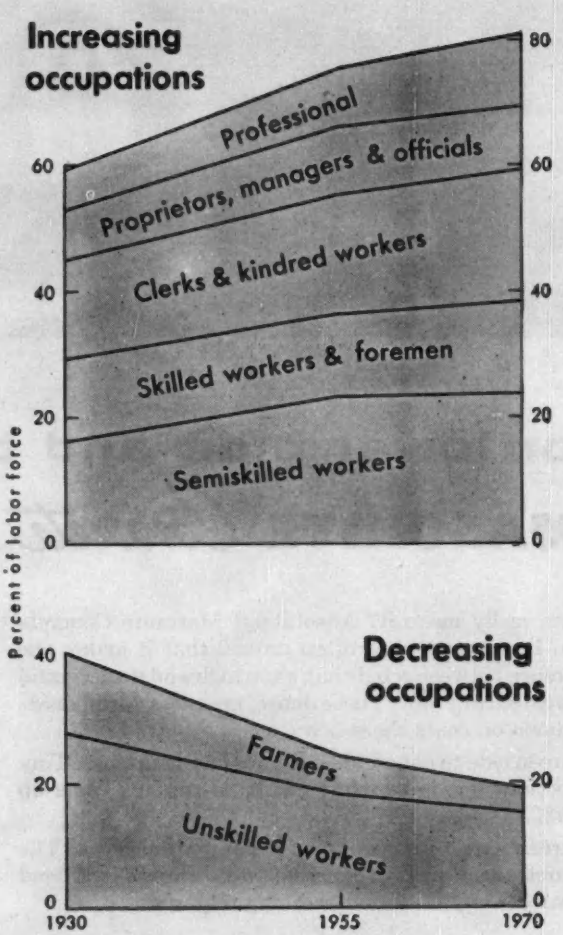
- 26% reported increases in employment averaging 21%
- 51% reported no change in total employment
- 23% reported decreases in employment averaging 16%

More Jobs for the Skilled

Of greater significance, however, is the response by 40% of these companies that they required more skilled maintenance men and by 21% of the companies that they had increased their engineering staffs. This indicates that automation is strengthening a trend already evident in the United States, a trend of expanding opportunity for those with industrial and professional skills and, relatively, of contracting opportunity for the unskilled.

The following chart shows how strong this trend has been over the past 25 years and how strong it may be expected to be over the next 15 years.

There has been a sharp decline in the percentage of unskilled workers in the nation's labor force and a corresponding increase in the percentage of those with varying degrees of skill.



It is possible, of course, to cite cases of individuals and groups that do not conform to the charted trends. Farmers, for example, are becoming at the same time more skilled and less numerous. But this does not upset the broad proposition that opportunities are increasing for those who have skills.

(Continued on page 51)

WICKWIRE ROPE DISTRIBUTORS WEAR MANY HATS

Wickwire Rope distributors are men who wear many hats. They are at home in the headgear typical of the numerous and varied industries they serve—the marine and fishing trades, the oil fields, construction, logging and many other industries having specialized wire rope needs.

These men aren't hat models—they can wear these hats because of their long experience in the industries they serve. Add to this their intimate knowledge of local conditions and their comprehensive Wickwire Rope stocks, and you'll see that your Wickwire Rope distributor is the man who can be of great help to you.

Yes, your Wickwire Rope distributor is a good man to know. He's quality people handling quality products. Buy your wire rope and wire rope slings from him. You'll find that the many valuable services he offers far outweigh any apparent price advantage you might gain by buying direct.

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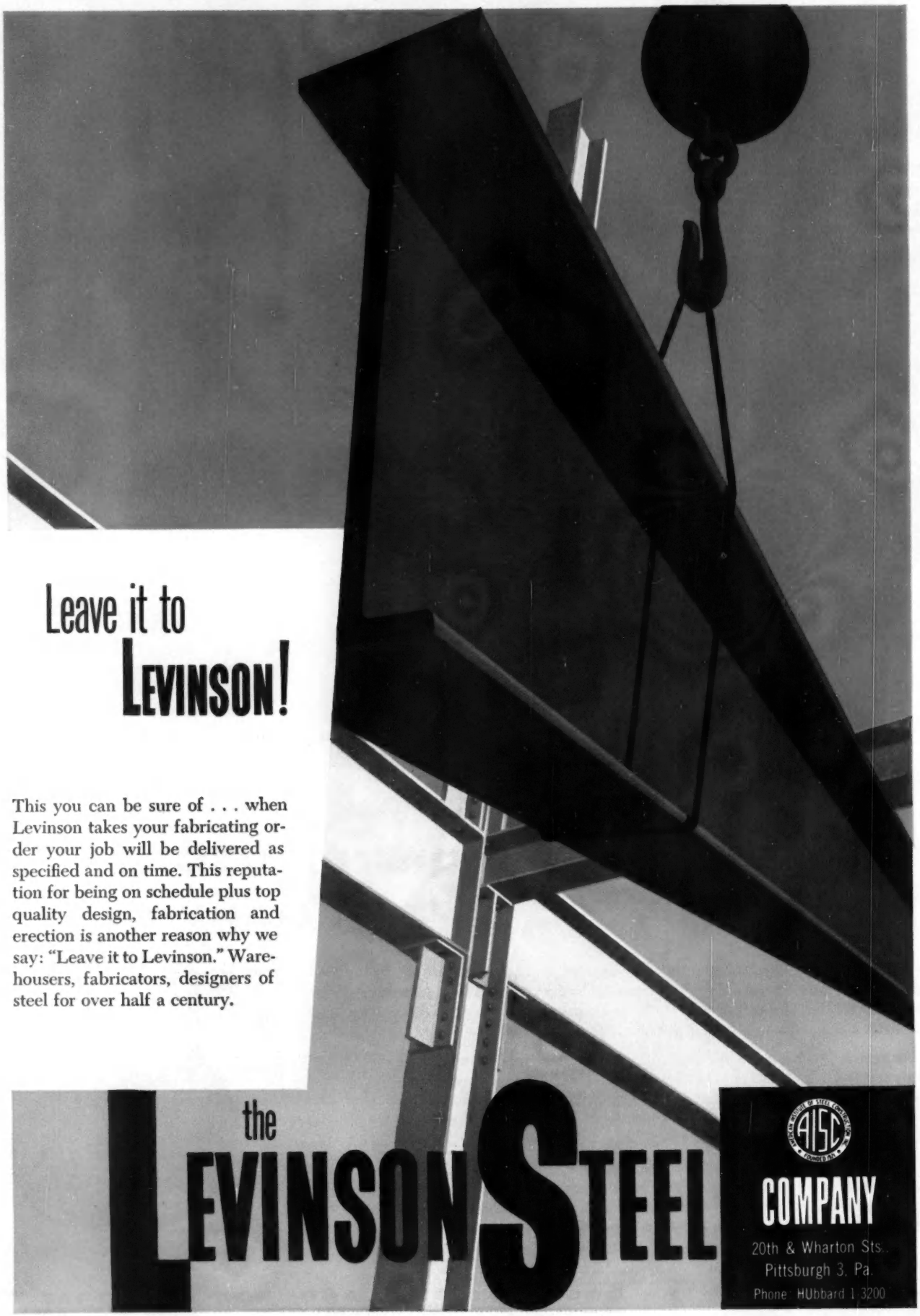
(Continued on page 51)



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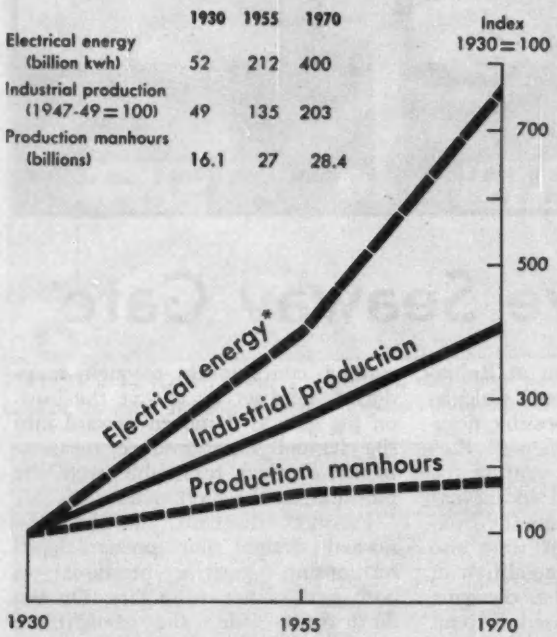
(Starts on page 48)

Power and Production

Much of the basic explanation for the relative expansion of opportunities for those with industrial and professional skills lies in the increasing use of power-driven machinery. This has made possible a vastly greater increase in manufacturing production than in the manhours of human labor devoted to it. The following chart shows the relative increases in electrical energy and manhours of labor used in manufacturing since 1930 and the rise in industrial production.

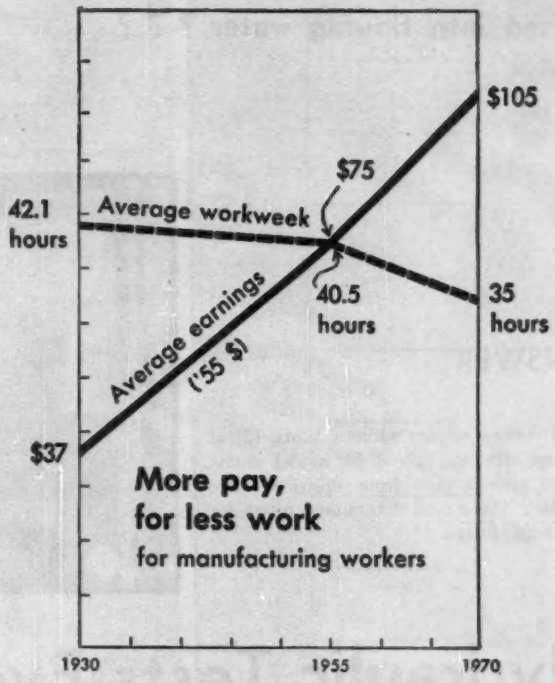


*Excludes power used in aluminum and magnesium reduction, both very heavy power users.

Power-driven machines have reduced the amount of human energy required for physical labor, but they have increased the need for skillful handling and maintenance. As the AMERICAN MACHINIST survey demonstrates, the same is true of automatically controlled machinery.

Higher Wages, More Leisure

The rising average wage of American industrial workers and the decline in hours per week that they must work reflect directly the extent to which the increase in industrial production has outstripped the manhours devoted to it. The final chart shows the increase in weekly wages (in dollars of constant purchasing power) and the decrease in the average workweek in manufacturing since 1930. It also shows the changes that may come in the next 15 years if present trends continue.



There are some who would slow what an earlier editorial in this series characterized as "the continuing process of taking dull and laborious work off the backs and minds of men and transferring it to machines operating in large batteries under automatic control." In doing so, they might make the world safer for those with no skill. The far more constructive course is to welcome the expanding opportunities now being provided and be sure that the nation's young people, who are now starting another school year, are prepared to take advantage of them.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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Donald C. McGraw

PRESIDENT

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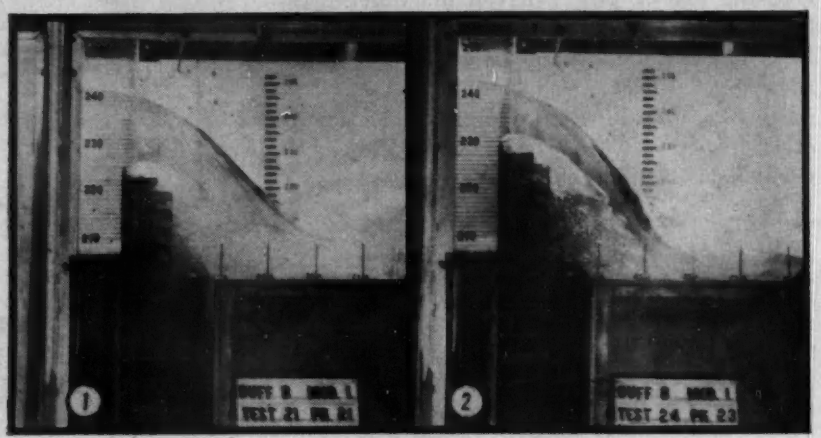
What are the hydraulic forces to be considered in design of a gate to be raised into flowing water ? ? ?

ANSWER:

(1) Overflow aerates without vents; (2) at a crest elevation found by model study, nappe springs clear from upstream edge of gate. These facts determined forces for structural design.



Hydraulic Tests Evolve Seaway Gate

What happens when you raise a depressed vertical gate into a flowing stream? Do considerable negative pressures develop on the downstream side? Are vents needed to aerate the overflow? At what crest position will the gate cease being a submerged weir and discharge a free flow? What of the vertical load of an overflowing sheet of water?

These were the questions faced and answered by Corps of Engineers designers of an emergency, vertical-lift gate for Robinson Bay Lock on the St. Lawrence Seaway. This is the upstream lock of two in the 10-mile Long Sault Canal, which will pass the International Rapids around Massena, N. Y., and Cornwall, Ont., where about a 92-ft drop in the river is being developed now for power.

A 46-ft vertical gate, 80 ft wide, has been designed to be raised 2 ft per minute in any emergency to close off the canal and prevent its flooding by flow from the power pool upstream.

Designers of this vertical gate in the Buffalo District Office think it may be the highest of its type and could find little previous experience on which to base answers to the many hydraulics questions posed. In the 1944 Transactions of ASCE they found that G. H. Hickox had reported appreciable negative pressures on such a lift gate (vacuum on the order of 9 ft of water), but his gate was atop an ogee spillway.

The particular situation at Robinson Bay Lock was analyzed. Calculations were made on the possible negative pressures. (It was figured they might be considerable; a venting system was thought needed to prevent formation of vacuum under the overflowing jet.) Calculations were also made to find where the condition of free overfall would begin as the gate, a submerged weir, was raised. (About 12 ft was the theoretical answer.)

Model studies then were made by the Corps' St. Paul District of the University of Minnesota.

The 1:33⅓-scale, sheet-brass model at St. Paul revealed downstream conditions not nearly as bad as conservative calculations had shown. Briefly:

- The model tests showed no appreciable negative pressure downstream.
- They showed that flow over the gate would aerate naturally, without vents, as air leaked around gate edges.
- They showed that free overfall would start when the gate crest height reached about 22 ft above channel bottom—instead of the 12 ft figured.

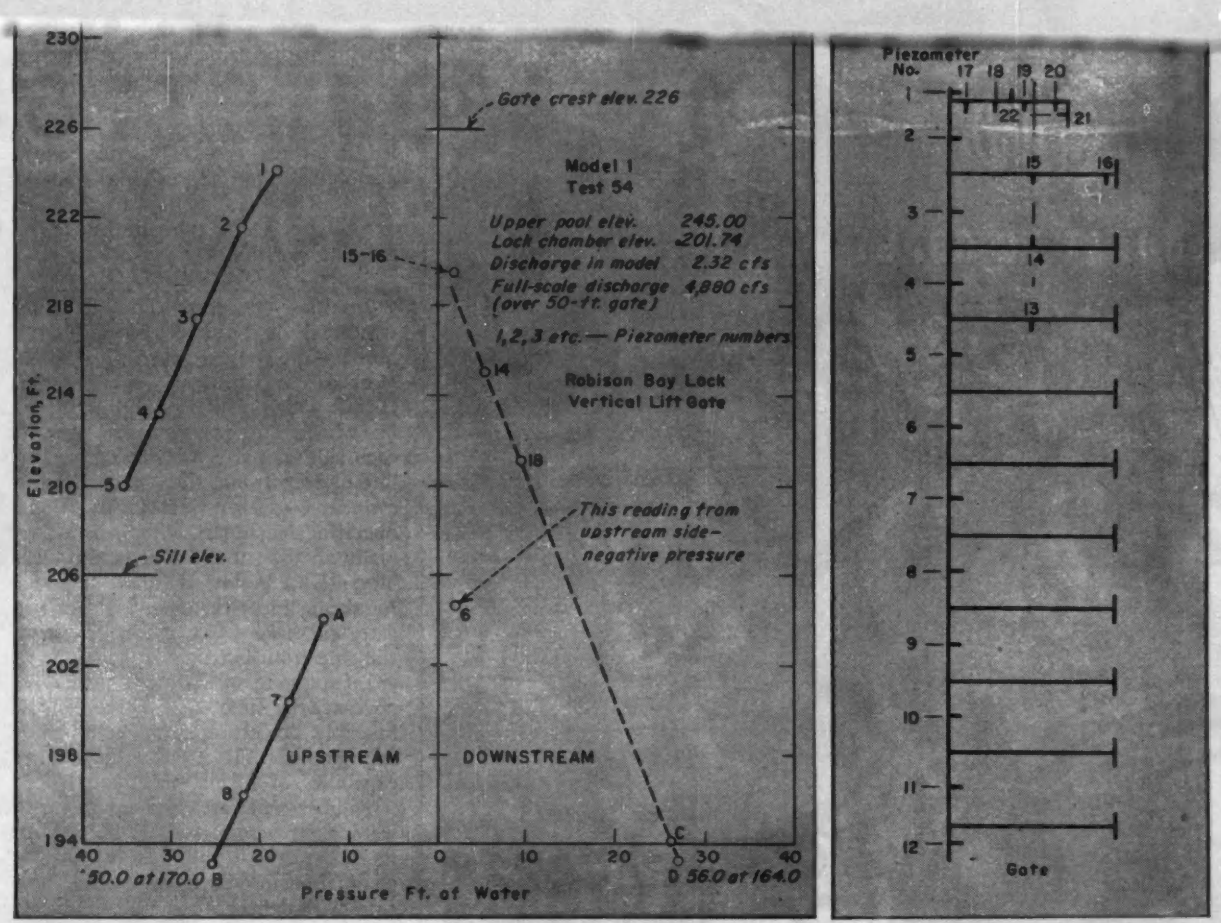
Piezometers were used to measure pressures at various points on upstream and downstream sides of the gate as it was raised in the model. Pressures at various points could then be averaged over areas in calculation of horizontal loads on members of the steel gate under design.

As a second method, strain gages, reading continuously through transducers, were set up to give the loads on the gate as it moved upward into the channel. The transducer measurements checked reasonably well the pressures on the piezometers.

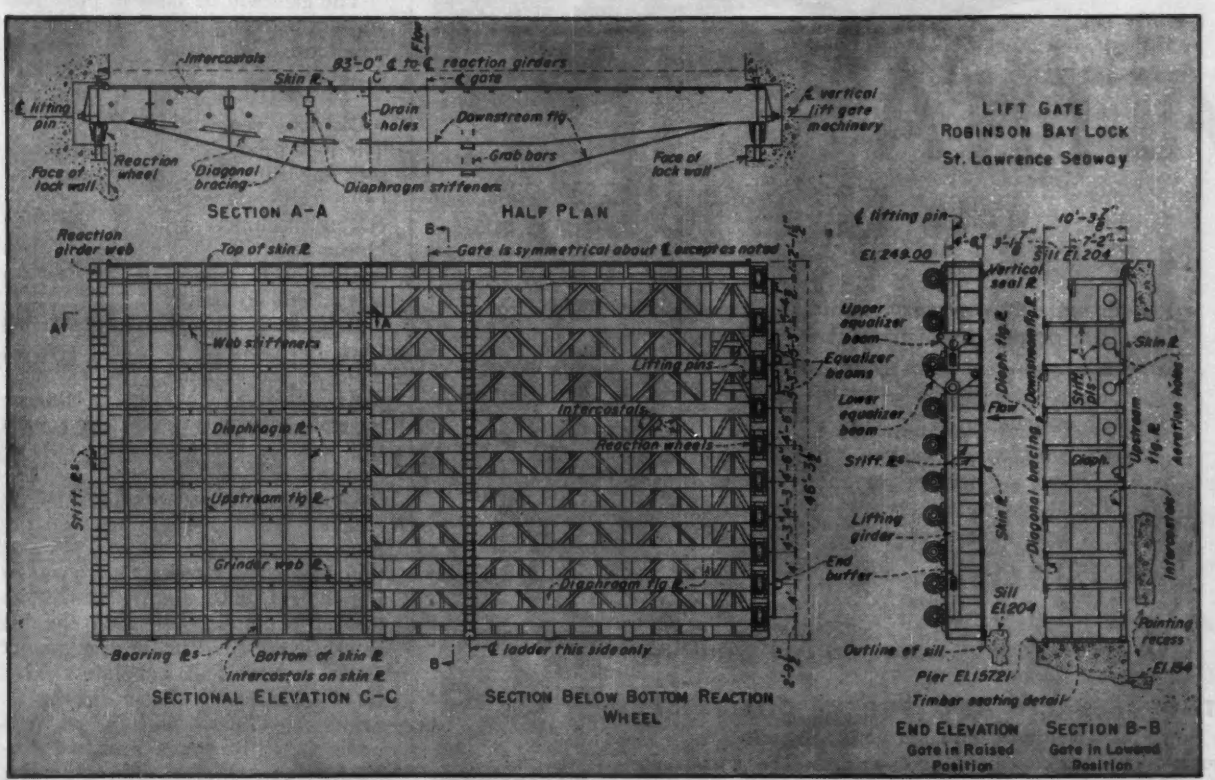
Pressure diagrams showed the normal straight line pressure-depth relationship, positive pressures on both sides of the rising gate. On the downstream side, the straight-line pressure diagram exists from top to bottom of the gate. On the upstream side, it exists against the portion of the gate raised from its depression, while greatly lessened pressure exists between the gate sill and the gate, where water flows underneath the rising gate until it reaches the closed position and a seal is made.

For horizontal loads at various crest positions the designers had merely to add algebraically the opposing forces found in model studies.

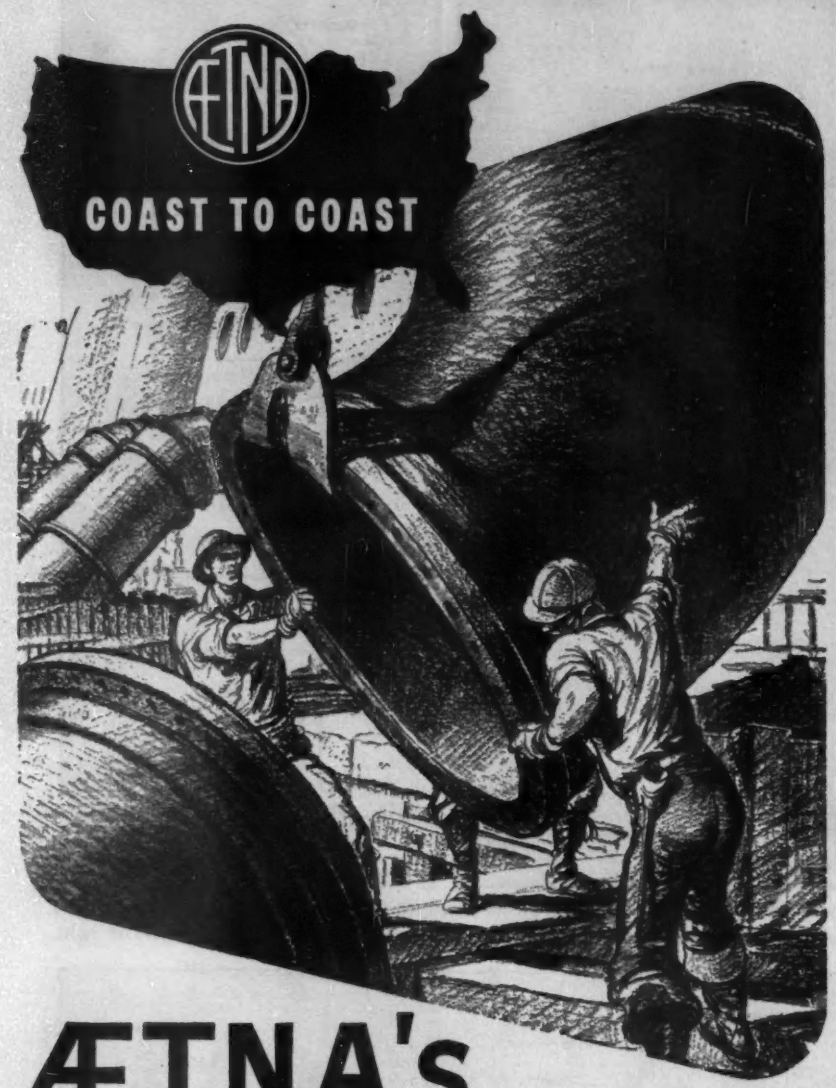
Vertical forces were another problem. As long as the gate was completely submerged, the only vertical load was its weight, less its buoyancy. As free overflow began, the buoyant effect was reduced; it disappeared entirely when the gate was fully raised. The overflowing jet sprang from the upstream face of the gate, leaping the top of the gate, so there was no downward force of water to consider. But then, as the crest of the rising gate approached an elevation about 5 ft below the upper pool level the over-



PLOTTED FINDINGS—For a single test, data show positive, straight line pressure diagrams on both upstream and downstream sides of the gate. Break in upstream diagram indicates lower portion of gate is still in depression. Piezometer locations are at right.



RESULTING DESIGN—Structural steel gate is designed to carry the horizontal and vertical loads found on it by the hydraulic tests described. Gate will weigh 700,000 lb and will be constructed in place.



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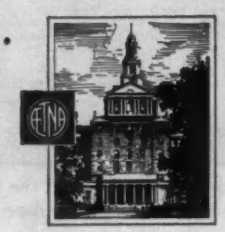


flowing nappe came to lay on the top of the gate as it overflowed. This added the vertical load of a 3-ft column of water over the width and length of the gate. Designers chose a stepped top rather than a curved shape for the gate section, to keep the overflowing jet off the gate top for as long as possible.

• **Resulting structure**—The resulting structural design (see drawing) is a horizontally framed gate with a sheet-steel skin on its upstream side only. It will weigh 700 kips and be lifted by two hydraulic cylinders, one on each side of the channel. A four-part line leads from the gate to the cylinder on either side. Cylinder and operating machinery will all be below grade, in the substructure of the lock. Two 75-hp motors, to drive a pump for the cylinder on either side of the gate will have selsyn control to keep the gate from twisting as it lifts.

Lifting rate of 2 ft per minute is governed by time the lock could permissably be left open without flooding seriously. It is also affected by capability of lifting machinery.

Rubber seals are to keep the gate water-tight across its bottom and up its sides. With full pressure of the channel against its upstream side, the gate will deflect about 1½ in. at its bottom, the rubber seal there had to be designed to span this gap.

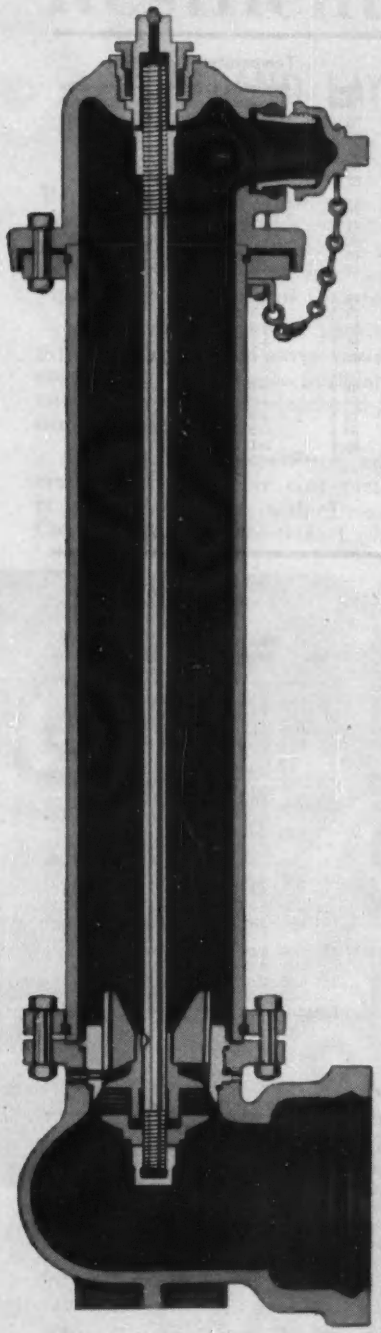
The gate will be built in place and will have stoplogs upstream to permit dewatering for future painting and maintenance.

• **Districts cooperating on design**—The lock miter gates for both Robinson Bay and Grass River locks and culvert valves together with the operating machinery are being designed by the Nashville District of the Corps of Engineers, under the supervision of the Buffalo District.

Basic design of both Robinson Bay Lock and Grass River Lock are being done in the Buffalo District Office. This includes all concrete work, the general mechanical work and electric work together with the excavations and dikes.

Col. Loren W. Olmstead is District Engineer in Buffalo where centers the responsibility for the entire U. S. portion of the St. Lawrence Seaway. In the Buffalo office, John P. Davis has headed hydraulic design on the lift gate. In the St. Paul District's work at St. Anthony Falls Laboratory, Martin E. Nelson has been in charge. Structural design of the gate was under G. F. Brown in Buffalo. Stanley B. Hunt, chief of the engineering division, Buffalo District, supervises design of the Seaway project.

COSTS LESS TO INSTALL
COSTS LITTLE TO MAINTAIN



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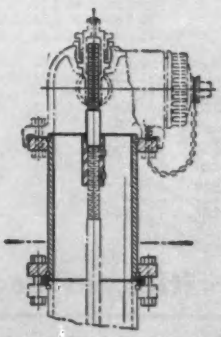
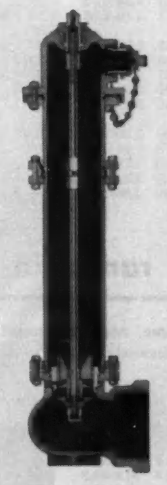


Extension piece can be inserted between hydrant head and barrel, or between barrel and elbow, without shutting off water supply.



Breakable flange and stem coupling can be furnished at extra cost. Both are constructed so that a heavy blow will snap the ring and coupling, thus saving more costly damage to the hydrant itself. Both can be replaced quickly and inexpensively with spares. No digging necessary.

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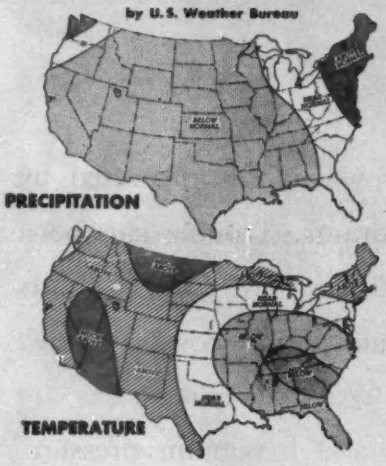
WEATHER

30-DAY WEATHER OUTLOOK

Mid-October to mid-November

by U.S. Weather Bureau



PRECIPITATION

TEMPERATURE

Observed weather in 20 cities, compared with normals

	Precipitation, inches				Temperature, degrees			
	Sept. 1955	Departure fr. normal	9 Mos. 1955	Departure fr. normal	Sept. 1955	Departure fr. normal	Av. daily maximum	Av. daily minimum
Atlanta	0.96	−2.00	31.44	−7.16	75.4	+1.0	84.5	66.2
Baltimore	0.56	−2.90	36.53	+3.60	68.2	+0.3	76.5	59.9
Birmingham	T	−2.71	36.29	−5.14	77.6	+2.8	89.9	65.3
Boston	2.40	−0.89	42.85	+13.74	64.5	+0.2	73.1	55.8
Chicago	1.47	−1.76	23.61	−2.27	67.9	+2.3	78.2	57.5
Cincinnati	5.86	+2.98	38.24	+6.99	70.7	+1.8	82.9	58.5
Cleveland	1.61	−1.52	29.83	+5.12	67.2	+1.7	78.2	56.2
Dallas	2.47	−0.24	20.49	−6.21	80.8	−1.9	91.3	70.2
Denver	1.93	+1.00	10.62	−0.59	65.2	+1.5	77.6	52.7
Detroit	1.82	−0.96	17.99	−6.37	65.6	+1.3	76.5	54.7
Kansas City	3.41	−0.44	27.54	−1.17	73.6	+3.0	83.8	63.3
Los Angeles	T	−0.27	9.10	−0.26	74.5	+3.5	85.2	63.8
Minneapolis	0.99	−1.86	16.60	−4.17	63.0	+0.8	73.9	52.0
New Orleans	9.55	+3.73	60.96	+9.67	81.8	+1.5	88.0	75.6
New York	2.27	−1.40	30.76	−2.07	67.7	+4.1	73.7	61.6
Philadelphia	1.17	−1.75	27.08	−5.70	68.0	+0.3	76.9	59.1
Pittsburgh	1.84	−0.93	28.91	−0.03	68.5	+0.6	78.6	58.4
St. Louis	4.04	+0.66	26.27	−3.54	74.5	+3.1	84.7	64.3
San Francisco	0.02	−0.11	7.09	−5.52	59.1	−2.5	65.9	52.2
Seattle	1.24	−0.32	14.47	−4.57	59.9	−1.1	67.3	52.4

T traces (less than 0.005 inches)

Precipitation range in 20 cities, in inches

Table shows range observed 33.3% of time. Rainfall heavier 33.3% of time.

Computed by U. S. Weather Bureau (based on historical records of actual precipitation)

City	Oct.	Mid Oct.-Mid Nov.	Nov.	Mid Nov.-Mid Dec.	Dec.	Mid Dec.-Mid Jan.	Jan.	Mid Jan.-Mid Feb.	Feb.	Mid Feb.-Mid Mar.	Mar.	Mid Mar.-Mid Apr.	Apr.	Mid Apr.-Mid May
Atlanta	1.59/2.90	2.01/3.38	2.43/3.85	2.94/4.58	3.46/5.30	3.42/5.32	3.39/5.33	3.28/5.50	3.36/5.67	3.40/6.00	3.42/6.33	3.12/5.72	2.82/5.10	2.48/4.72
Baltimore	1.66/3.77	1.16/3.45	1.56/3.12	1.99/3.43	2.41/3.73	2.59/3.85	2.77/3.96	2.57/3.68	2.36/3.39	2.48/3.76	2.59/4.13	2.59/4.17	2.58/4.20	2.76/4.30
Birmingham	1.52/2.58	1.84/3.24	2.17/3.91	2.95/4.83	3.71/5.75	3.75/5.58	3.75/5.40	3.61/5.64	3.47/5.88	4.18/6.26	4.48/6.63	3.91/5.85	2.94/5.07	3.05/4.81
Boston	2.49/4.07	2.62/4.26	2.74/4.46	2.72/4.33	2.89/4.20	2.83/4.12	2.39/3.45	2.70/3.99	2.64/3.93	2.12/3.58	2.94/4.50	2.66/4.45	2.39/4.40	2.58/4.29
Chicago	1.59/3.10	1.59/2.95	1.59/2.80	1.46/2.62	1.32/1.45	1.30/2.28	1.29/2.10	1.40/2.16	1.52/2.23	1.76/2.67	1.99/3.11	2.09/3.12	2.19/3.13	2.24/3.56
Cincinnati	1.49/2.90	1.74/3.28	1.99/3.67	2.14/3.48	2.29/3.28	2.32/3.54	2.34/3.80	2.07/3.40	1.80/3.00	2.10/3.64	2.39/4.29	2.26/3.94	2.34/3.60	2.42/3.85
Cleveland	1.75/3.16	1.79/2.97	1.82/2.77	1.76/2.68	1.70/2.56	1.65/2.58	1.59/2.60	1.55/2.52	1.51/2.43	1.81/2.71	2.10/2.98	2.15/3.13	2.20/3.27	2.27/3.38
Dallas	1.55/3.50	1.60/3.25	1.64/3.00	1.36/3.00	1.09/3.00	1.24/3.05	1.39/3.10	1.49/2.70	1.59/2.30	1.96/3.08	2.34/3.86	2.50/4.68	2.66/5.50	2.82/5.38
Denver	0.62/1.10	0.46/0.89	0.29/0.68	0.34/0.72	0.39/0.77	0.28/0.64	0.19/0.50	0.26/0.54	0.34/0.58	0.46/0.84	0.59/1.10	0.96/1.75	1.34/2.40	1.48/2.65
Detroit	1.63/2.69	1.70/2.66	1.77/2.78	1.70/2.66	1.64/2.60	1.63/2.50	1.62/2.40	1.56/2.45	1.51/2.50	2.14/2.84	1.77/2.78	1.78/2.75	1.79/2.73	2.14/3.20
Kansas City	1.69/4.07	1.48/3.21	1.27/2.35	1.02/1.95	0.77/1.55	0.68/1.48	0.59/1.42	0.80/1.66	0.99/1.90	1.29/2.40	1.59/2.90	1.99/3.15	2.39/3.40	2.82/4.40
Los Angeles	0.15/0.60	0.20/0.95	0.26/1.30	0.70/2.00	1.14/2.70	1.19/3.00	1.24/3.30	1.12/3.25	0.99/3.20	1.06/3.08	1.13/2.95	0.68/1.92	0.22/0.90	0.14/0.62
Minneapolis	1.29/2.45	0.98/2.01	0.67/1.57	0.62/1.44	0.57/1.30	0.60/1.19	0.64/1.08	0.58/1.08	0.52/1.08	0.75/1.38	0.98/1.67	1.34/2.14	1.69/2.60	2.16/3.29
New Orleans	1.99/4.12	2.34/4.40	2.69/4.67	2.96/4.92	3.24/5.17	3.36/5.28	3.49/5.40	3.14/5.05	2.79/4.70	3.00/5.00	3.22/5.30	2.94/5.15	2.66/5.00	2.65/5.12
New York	2.09/4.13	2.15/4.04	2.21/3.95	2.42/3.86	2.64/3.77	2.55/3.71	2.46/3.65	2.41/3.88	2.36/4.10	2.35/4.08	2.34/4.05	2.40/3.92	2.47/3.78	2.50/3.90
Philadelphia	1.99/3.90	2.18/3.65	2.36/3.50	2.50/3.70	2.64/3.90	2.60/3.80	2.57/3.70	2.57/3.69	2.57/3.68	2.60/3.84	2.62/4.00	2.56/3.91	2.49/3.82	2.44/4.11
Pittsburgh	2.09/3.20	1.96/2.96	1.84/2.72	1.96/3.00	2.09/3.27	2.12/3.20	2.14/3.13	1.96/2.98	1.77/2.83	2.06/3.15	2.34/3.47	2.32/3.44	2.29/3.40	2.39/3.58
St. Louis	1.69/3.25	1.78/3.28	1.86/3.30	1.70/3.05	1.64/2.80	1.52/2.75	1.39/2.70	1.48/2.80	1.57/2.90	1.92/3.42	2.27/3.95	2.43/3.88	2.59/4.10	2.86/4.65
San Francisco	0.19/1.20	1.12/2.25	2.04/3.30	1.62/4.28	2.19/5.25	2.34/5.12	2.49/5.00	2.24/4.86	1.99/4.71	1.96/4.13	1.94/3.55	1.30/2.54	0.64/1.54	0.44/1.12
Seattle	2.32/3.50	3.07/4.55	3.82/5.60	4.00/5.74	4.17/5.89	4.14/5.57	4.12/5.25	3.34/4.92	2.55/4.60	2.18/4.02	1.81a2.43	1.72/3.16	1.64/2.90	1.53/2.45

Mean temperature range in 20 cities, in degrees F.

Table shows range observed 25% of time. Mean temperature higher 37.5% of time, lower 37.5% of time.

Computed by U. S. Weather Bureau (based on historical records of actual temperature)

City	Sept.	Mid Oct.-Mid Nov.	Nov.	Mid Nov.-Mid Dec.	Dec.	Mid Dec.-Mid Jan.	Jan.	Mid Jan.-Mid Feb.	Feb.	Mid Feb.-Mid Mar.	Mar.	Mid Mar.-Mid Apr.	Apr.	Mid Apr.-Mid May
Atlanta	62.3/63.8	56.6/58.2	51.1/52.7	46.6/48.4	44.0/46.0	48.3/50.3	43.5/45.5	44.0/46.4	45.1/47.9	47.5/50.1	51.2/53.6	55.9/58.0	60.9/62.6	64.9/66.5
Baltimore	56.5/58.3	50.9/52.6	45.6/47.0	40.2/42.0	35.8/37.8	34.2/36.1	33.9/35.7	33.2/36.0	34.6/38.0	38.1/41.7	42.0/45.7	46.6/49.4	51.9/53.6	57.5/59.0
Birmingham	62.2/64.2	56.2/58.5	50.7/53.2	46.5/48.9	44.3/46.5	43.4/46.1	43.5/46.5	44.4/47.6	46.0/49.4	48.8/51.7	52.4/54.7	56.6/58.5	61.1/62.6	64.5/66.2
Boston	54.2/56.2	49.3/51.2	43.6/45.6	36.8/39.2	31.2/34.0	28.9/31.9	30.3/31.2	26.4/29.6	27.8/30.0	31.4/34.0	3.56/38.6	41.1/43.3	46.7/48.3	51.5/53.1
Chicago	52.8/55.3	45.9/48.6	38.6/41.5	31.2/35.0	25.7/30.3	23.7/28.5	23.2/28.1	23.1/28.1	24.7/30.7	29.2/34.2	34.6/39.1	40.9/43.8	47.5/48.8	52.9/54.8
Cincinnati	55.9/57.1	48.6/50.9	42.0/44.5	35.9/39.1	31.4/35.2	30.1/34.4	20.8/34.6	29.9/34.4	31.6/36.0	35.2/39.2	39.6/43.1	45.4/48.1	51.4/53.3	56.4/58.6
Cleveland	53.5/55.6	47.1/49.3	40.5/42.7	34.3/37.2	29.3/32.9	27.3/30.9	26.9/30.5	26.0/29.6	26.2/29.7	29.8/33.7	34.7/38.8	40.3/43.2	46.2/47.8	52.8/53.9
Dallas	68.5/69.4	61.4/63.1	54.3/56.7	49.9/52.3	47.0/49.3	44.8/48.1	44.1/47.5	45.8/49.2	48.8/52.2	51.9/55.6	55.5/59.6	60.1/64.0	64.2/67.3	68.4/71.1
Denver	50.8/52.8	44.5/47.2	38.0/41.4	33.5/36.7	30.5/33.5	28.3/31.4	27.0/30.0	27.9/31.5	30.5/34.7	33.1/36.8	35.9/39.1	40.4/43.2	46.3/48.6	51.1/53.4
Detroit	51.9/54.1	45.8/47.9	39.2/41.1	32.9/35.3	27.9/30.9	25.6/28.5	24.8/27.7	24.2/27.8	24.6/28.9	27.9/32.1	33.1/37.2	39.3/42.1	45.6/47.1	51.0/52.8
Kansas City	58.1/61.2	50.7/53.9	42.6/45.9	36.7/40.1	32.4/35.9	30.4/33.0	30.0/31.9	30.2/33.6	32.2/37.1	37.3/41.2	42.9/45.9	48.6/51.2	54.9/56.7	59.9/61.7
Los Angeles	62.7/64.2	60.5/62.1	57.9/59.8	56.5/58.2	54.9/56.5	53.4/54.8	52.7/54.0	53.6/54.3	52.9/55.1	54.1/56.3	55.4/57.4	56.6/58.4	58.1/59.7	59.8/61.3
Minneapolis	49.8/51.7	40.4/44.5	30.9/36.0	24.5/28.1	17.2/22.3	13.8/18.4	13.4/16.5	13.3/17.7	15.0/20.8	21.7/25.9	29.9/32.5	37.3/39.5	44.7/47.9	51.3/54.4
New Orleans	70.5/71.9	64.6/66.8	59.0/61.5	56.0/58.5	54.6/56.8	53.2/56.0	52.6/56.0	54.0/57.4	55.9/59.3	57.6/60.8	60.6/63.0	64.3/65.7	67.4/69.1	70.7/72.1
New York	57.0/58.6	51.8/53.2	46.5/47.9	40.2/42.3	34.6/37.5	34.5/35.2	32.4/34.6	30.9/33.6	30.9/33.6	34.1/36.8	38.7/41.3	43.6/46.0	49.0/51.0	54.6/56.3
Philadelphia	55.6/57.6	50.3/52.3	45.3/47.2	39.9/42.0	35.1/37.3	32.7/35.4	31.8/35.0	31.1/34.3	32.3/35.3	36.4/39.2	40.8/43.5	45.6/47.9	50.8/52.6	56.2/58.0
Pittsburgh	52.0/54.4	46.2/48.2	40.3/42.0	34.0/36.4	29.5/32.6	24.8/28.0	26.9/30.1	26.4/30.5	26.9/32.0	30.5/35.4	36.0/40.6	43.9/46.5	48.0/49.8	53.1/55.1
St Louis	58.1/60.5	51.0/53.9	43.6/46.9	37.6/41.2	33.3/37.1	30.9/35.1	30.1/34.7	31.3/35.7	33.7/38.1	37.8/41.8	42.9/46.3	48.6/51.5	54.5/57.0	60.2/63.3
San Francisco	58.5/60.2	56.4/57.9	53.8/55.0	50.7/52.3	48.7/50.2	47.1/48.9	46.9/49.1	48.3/50.8	50.0/51.7	51.0/52.7	51.7/53.5	52.4/54.2	53.2/55.0	54.3/55.9
Seattle	51.0/52.5	41.8/43.8	43.1/44.5	41.0/42.4	39.4/40.7	37.7/39.0	36.2/38.5	38.2/40.0	39.7/42.0	41.7/43.3	43.6/44.7	45.6/47.2	48.2/49.9	51.0/52.9

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Resilient Joints "Float" Pipe

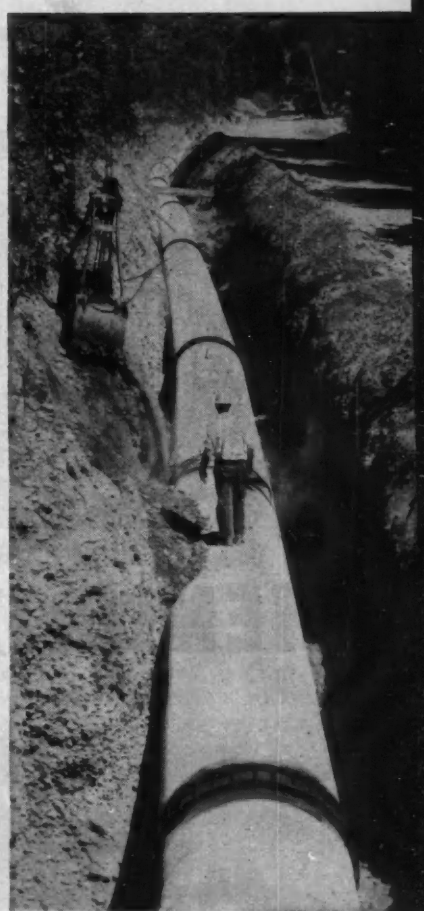
PORTLAND LAYS DRESSER-COUPLED STEEL LINE TO CONTOUR OF LAND

Rugged, hilly Oregon country and tough, widely varied job conditions are ideal for proving the head-and-shoulders superiority of steel water pipe joined with Dresser Couplings.

Buying what amounts to "packaged pipe lines", Portland saves valuable engineering time, speeds installation and has an accurate beforehand picture of over-all costs.

And from past experience, cities everywhere find their cost picture is invariably lower with Dresser-Coupled steel construction. Lighter weight steel pipe lowers handling costs. Long, strong pipe lengths call for fewer joints . . . lower installation time. Flexible, yet bottle-tight Dresser Couplings "float" pipe sections in the joints . . . make installations readily adaptable to almost *any* job conditions without a lot of costly specials.

Looking back over the cost and maintenance records of previously installed Dresser-Coupled steel lines, these cities have practical, dollars-and-cents evidence of being able to *deliver water cheaper.*



This 25-mile, 66" Dresser-Coupled steel line, from Portland, Oregon's Mt. Tabor reservoir, increases water supplies by 100 mgd. Engineered by the City of Portland and installed by the Kuckenberg Construction Company, it encounters curves of 2 to 2½° both vertical and horizontal.

✓ *Wherever water flows—steel pipes it best!* **Always put steel pipe and Dresser Couplings in your specifications.**

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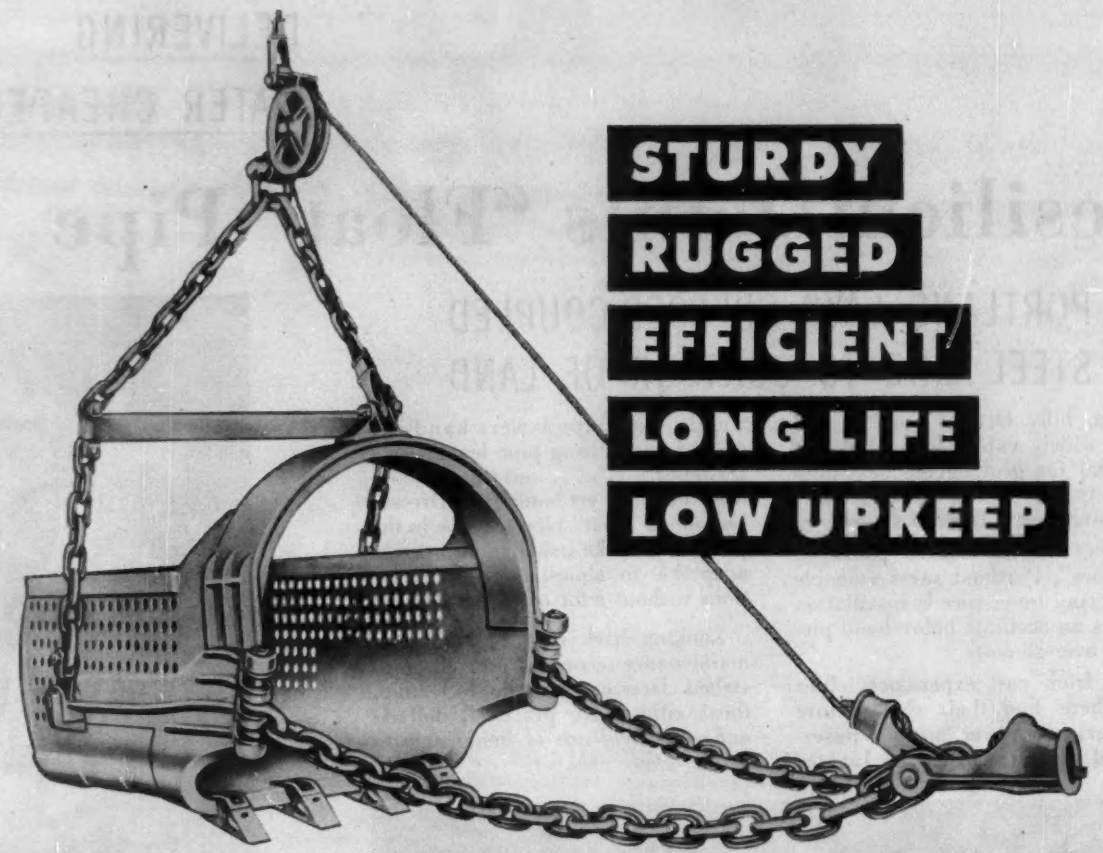
Dresser Manufacturing Division, 69 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston; 101 S. Airport Blvd., S. San Francisco. Sales offices also in: New York, Philadelphia, Chicago, Toronto.

San Francisco	58.5/60.2	56.4/57.9	53.8/55.0	50.7/52.3	48.7/50.2	47.1/48.9	46.9/49.1	48.3/50.8	50.0/51.7	51.0/52.7	51.7/53.5	52.4/54.2	53.2/55.0	54.3/55.9
Seattle.....	51.0/52.5	41.8/43.8	43.1/44.5	41.0/42.4	39.4/40.7	37.7/39.0	30.2/38.5	38.2/40.0	39.7/42.0	41.7/43.3	43.6/44.7	45.6/47.2	48.2/49.9	51.0/52.9



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HENDRIX DRAGLINE BUCKETS

- ✓ LESS BUCKET WEIGHT, type for type.
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- ✓ ALL-WELDED CONSTRUCTION for greater strength and durability.
- ✓ 14% MANGANESE STEEL chains, fittings and reversible tooth points.
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Years of engineering skill and know-how have gone into the design of Hendrix Dragline Buckets . . . and to assure long, efficient service with lowest possible maintenance, only highest quality materials are used under rigid manufacturing standards.

Yes, The Hendrix Bucket you buy today has the built-in stamina to provide long-life profitable operation day after day . . . job after job!

A TYPE FOR EVERY DIGGING PURPOSE

¼ to 40 Cubic Yards

All Hendrix Buckets available without perforations

Hendrix Lightweight Dragline Buckets

HENDRIX MANUFACTURING CO., Inc.
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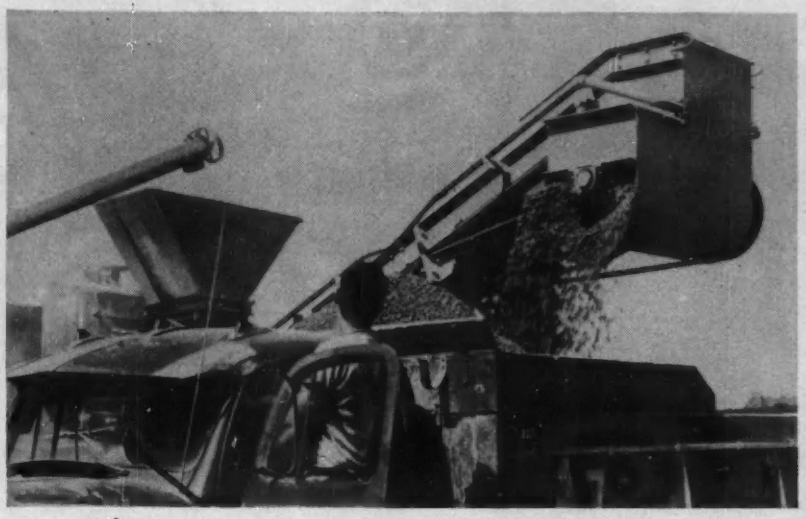
NEW PRODUCTS



Attachment Proportions Additives

A delivery conveyor attachment mixes water and calcium chloride with aggregate before it is discharged from surge bins or gravel plants into a truck body. The mixing unit reportedly eliminates the need for other sprinkling or spraying equipment on the road bed and provides more accurately controlled proportioning of calcium chloride and moisture than is possible with surface mixing methods.

The unit, called the Cedarapids Volumetric Proportioning Continuous Mixing Type Pugmill Attachment, fits under the head pulley of a delivery conveyor. Optional equipment which adapts the unit to various road surfacing methods include a calcium chloride feeder, a water meter, a quick-close valve, and a water pump.

The mixer contains an 18-paddle pugmill that mixes the material and discharges it into the truck body. Also included in the mixing unit is a 2-in. spray bar to add the proper amount of water into the aggregate as it is mixed. The calcium chloride feeder consists of an enclosed bin unit and a short conveyor belt to add a controlled amount of chemical to the aggregate on the delivery conveyor belt. This unit is driven by the conveyor power unit.

The equipment can be added to the delivery conveyors of all types of portable and stationary surge bins and is available on special Cedarapids 5 and 10-yd portable bin units. With special adaptation, the unit can be fitted on the delivery conveyor belts of portable gravel crushing and screening plants. Iowa Mfg. Co., Cedar Rapids, Iowa.

New Insulation Can Stand Temperatures Up to 1,800 F.

A heat insulation product has been developed that withstands temperatures of 1,800 F. The new hydrous calcium silicate product, used primarily as covering for pipes and vessels, has the advantage of expanding slightly up to 1,000 F, and when completely immersed in a test furnace at 1,800 degrees F, shrinkage is reportedly limited to about 1½%.

Kaylo-20, as it is called, is produced in a finger-nail pink color to distintinguish it from standard Kaylo which is effective up to 1,200 deg. Owens-Illinois, Toledo, Ohio.

Spark-proof Impact Tools Made for Hazardous Areas

A new line of paving breaker, demolition, and digging tools is available for use in areas where there are hazardous liquids, flammable gases or dusts which could be ignited by a spark.

The tools are forged from a beryllium copper alloy, a material long known for its spark resisting properties, and used for years in cast tools for safety purposes. Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

(*New Products continued on page 60*)

Rear Blade Usable for Light Grading

A 6-ft adjustable rear blade, designed to mount on all Ford tractors, features tilt, pitch and offset adjustments as well as blade angling. The rear blade angles 45 deg each side of center with seven-hole stops, and tilts 40 deg each side of center with nine holes. Blade pitch is adjustable to 10 deg plus or minus by means of an adjustment at the rear of the blade, with intermediate pitch adjustments made with the tractor's adjustable top link. Available as accessories are gauge wheels, end plates, skid shoes and ditching points. Transport clearance when raised by the tractor hydraulic system is 18 in., overall length is 48 in., overall height is 48 in., blade height is 48 in., blade height is 17 in., and weight is 360 lb. Ford Motor Co., Tractor & Implement Div., Birmingham, Mich.

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Much of the background and abilities of the Manu-Mine organization were developed in various types of mining and drilling operations.

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Aluminum Trailer Yields Bigger Payload

A new, all-aluminum welded flatbed truck trailer has been developed which has a 3,000-lb increased maximum payload.

The welded design is made possible by a new aluminum alloy—5083—developed to compete with mild steel in fabrication and welding costs.

An aluminum floor plate—3 ft wide and ½ in. thick—extends the full length in the center of the trailer to serve as a integral part of the frame. This floor plate, outer floor plates, outriggger components, mounting pads, flanges and crossmembers—all of aluminum—are welded to two main beam webs—36 in. apart—running the full length of the trailer. Strength and stiffness in the critical area at the forward transition section, where the beam webs decrease in depth, is obtained by double web, box girder construction.

A maximum payload of 45,000 lb was concentrated over the center 15 ft of the trailer, and maximum deflection was only ¾ in. compared to as much as 2 in. or more for some steel flatbeds. KAISER ALUMINUM & CHEMICAL CO., 1942 BROADWAY, OAKLAND 12, CALIF.

Circular Saw Is Low in Both Price and Weight

A new lightweight circular power saw can be used for cross cutting, rip cutting, bevel cuts, cutting asbestos siding or flooring, or for making preparatory depth cuts for grooving.

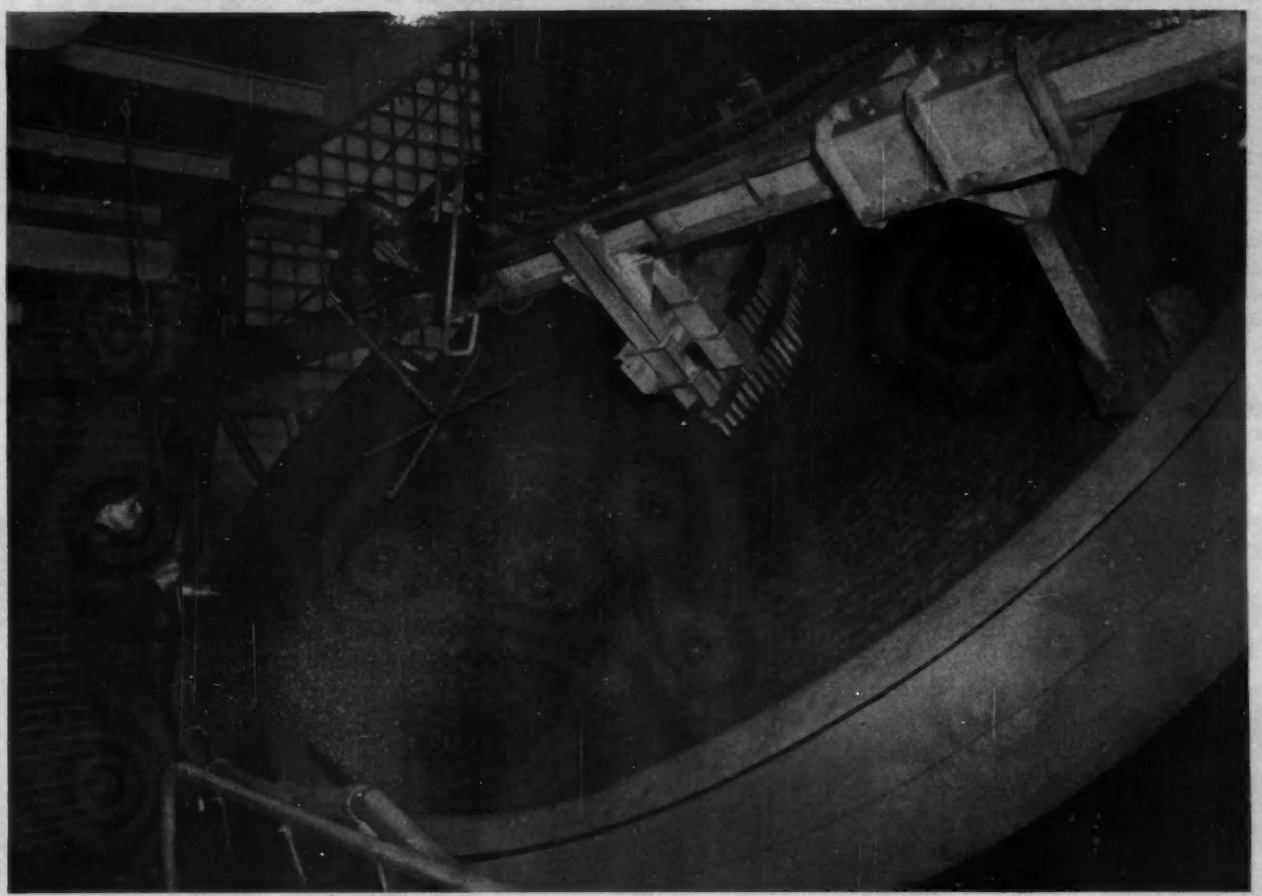
The manufacturers state that the 7-lb saw is ideal for prolonged cutting without tiring the operator. Priced at $29.95 the saw has a 6½-in. blade diameter and a telescoping blade guard. Maximum cut is 2⅛ in. Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill.

Wax Product Developed to Stop Dusting of Concrete

A new multi-purpose concrete sealer-finish, called Conq-r-Dust, has been developed for use on cured or uncured concrete and other masonry-type floors.

The manufacturer reports that it eliminates dusting on concrete floors and a result of its special formulation is that neutralizing is necessary when it is used on uncured concrete. The product dries in 20 to 30 min, and

(Continued on page 64)



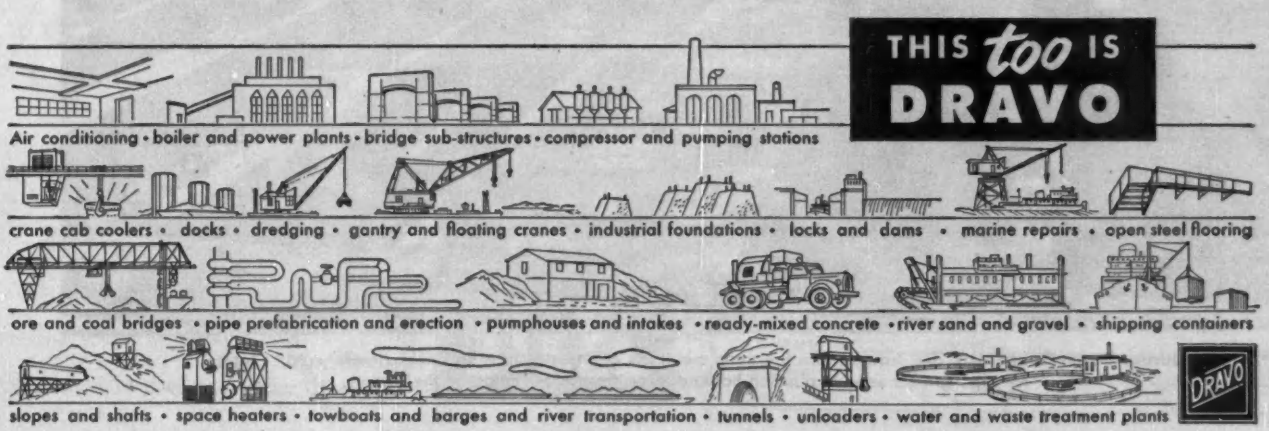
NEW WHEEL OF FORTUNE FOR THE STEEL INDUSTRY

Three of these huge tilted wheels have been installed at International Nickel Company's Copper Cliff, Ontario plant. They are pelletizing discs used with a sintering machine in a process that converts magnetite fines into a size suitable for handling in open hearth and blast furnaces.

The installation is part of a system that will recover iron content present in nickel ore and prepare a ready-to-use product for the steel industry. Dwindling American reserves of rich iron ore make even more important this method of using magnetite fines.

Developed by Lurgi, Europe's foremost designer of such machinery, this equipment is being adapted by Dravo to American standards for reliable servicing and quick delivery of parts. Inquiries are invited for technical information and design data.

For more than 60 years, Dravo has been serving business and industry in many engineering fields, with customer satisfaction considered essential in every transaction. DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.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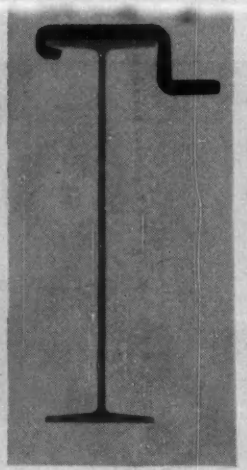
NEW YORK ENGINEER DEVELOPS NEW SYSTEM FOR FORMING FLOORS

A New York 12-story structure seldom makes news, but the $1,200,000 apartment building shown below is an exception. Its design incorporates a new method of forming floors which substantially reduces the over-all building costs.

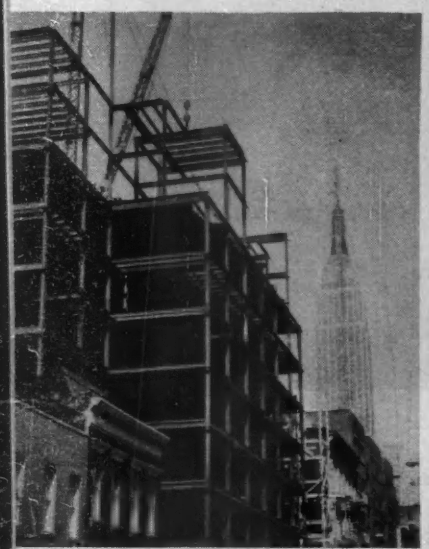
Developed by veteran consulting engineer, E. S. Klausner, the "K" system uses J&L Junior Beam construction to get low-cost, fast steel erection, and a small cast iron clip that speeds the laying and stripping of concrete forms.

Once the Junior Beams are framed into the main structural members, "K" clips are placed along the top flange of the beams. Next, 2x8′ sheets of plywood are placed between the beams so that they rest on the clips and serve as ready-made forms for the concrete.

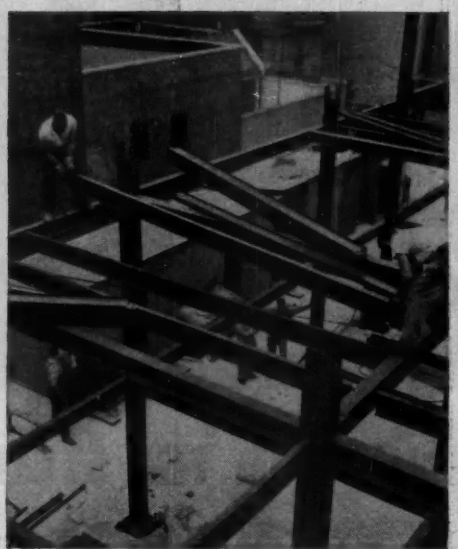
The design of the clip allows the concrete to extend ¼″ below the top flange of the beam, thus bracing the top flange of the Junior Beams along their entire length. This provides greater rigidity and eliminates the need for bridging. Finally, the forms are stripped simply by breaking off the exposed "tail" of the clip and allowing the forms to drop.



J&L Junior Beam and the "K" clip

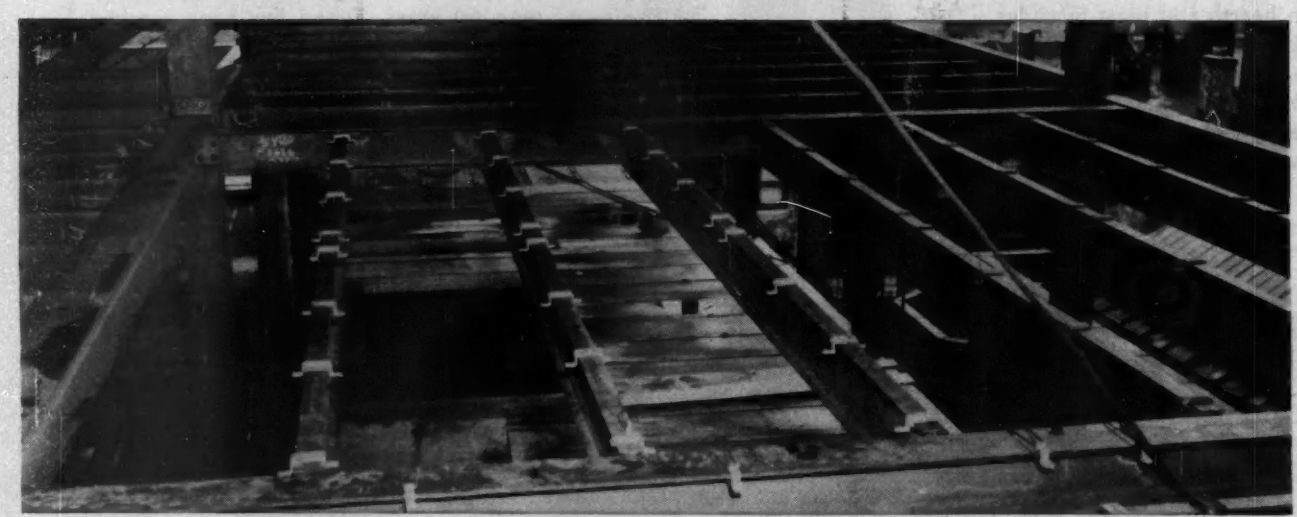


New 12-story apartment at 236 E. 35th Street in which the "K" system for forming floors was specified. Architects are Maxon, Sells and Ficke of New York.



Junior Beams are easily handled. As 16-foot length of 8-inch section weighs only 100 pounds, two men can position and bolt in a beam without tying up crane or derrick.

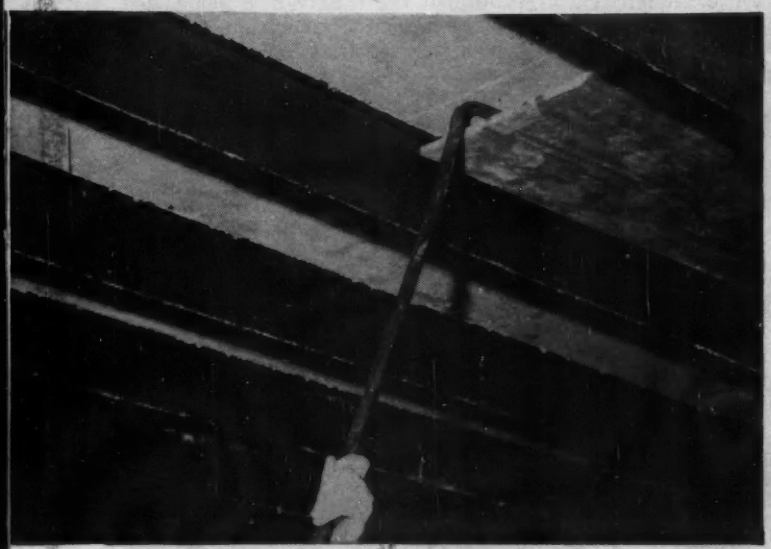
Hooking "K" clip over the flange of a Junior Beam to hold the 2′ x 8′ x ⅝″ plywood sheet used as concrete forms. Clips are placed every 2½ feet along the beam.



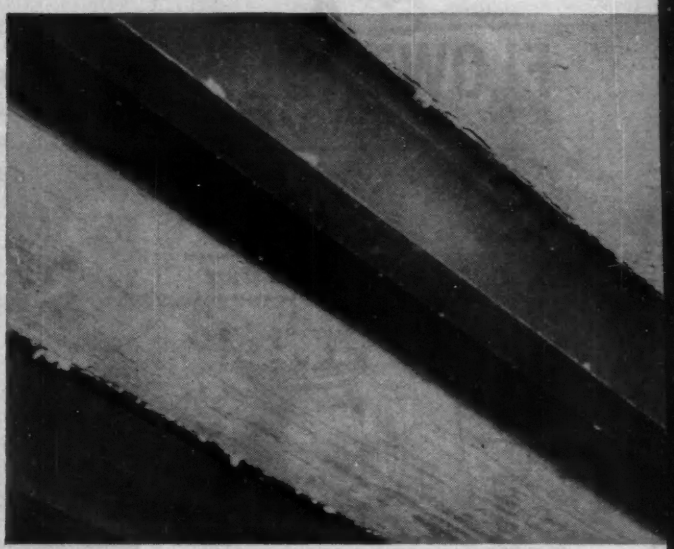
Junior Beam floor joists are framed into the main members of the structure on approximately 26″ centers. "K" clips can be seen in position hooked over the upper flange of the beams.

Ease of laying forms is demonstrated by workman. One carpenter and three laborers were able to place forms at the rate of 6-7,000 square feet a day.

Stripping forms. Light blow fractures exposed "tail" of cast iron clips, allowing forms to drop. The "K" clip will withstand a dead load of 1,000 pounds but fractures readily under impact.



Light tug removes forms. Two men strip 6-7,000 square feet a day. Forms can be easily stacked and re-used 20 or more times.



Bracing is eliminated. Upper flange of Junior Beam is encased in the floor slab and supported along its entire length.

Floor Forming Method Geared for Speed and Economy

The Junior Beams were economically fabricated by simply welding a pre-punched end plate to the web of the beam.

On the job, Junior Beams helped speed erection. Whitey Sapilla, Superintendent of the erection crew reported, "these J&L Junior Beams handle easily . . . sorting the steel is no problem. We raise the beams in bundles and two men can distribute and position them without tying up a crane or derrick."

Use of "K" clip makes laying and stripping the concrete forms a simple matter. One carpenter and three laborers were required, yet forms were going in at the rate of 6-7,000 square feet a day. Two men could strip 6-7,000 square feet in a day . . . and forms were re-used more than 20 times.

J&L STEEL

The "K" system is an outstanding example of sound engineering employing the strength and adaptability of lightweight Junior Beams to materially reduce construction costs. Write today for complete information showing how Junior Beams are used as floor joists, and roof purlins with loading and spacing tables for various spans. The coupon is for your convenience.

Jones & Laughlin

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VALVES

✓ *Use the Angle Body and Save the Price of an Elbow Fitting*

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HERE'S PROOF:
One of America's large railroads had a 6" gate valve installation that operated on the average of 55 times a day. In addition to frequent repairs, this valve had to be entirely replaced every 3 months.

In the Fall of 1947, this valve was replaced with a 6" G-A Flowtrol Valve. Now—more than 7 years later—this valve is still operating perfectly and not one parts replacement has been made!

Want to know more about this unique valve? Write for Bulletin W-8A today.

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Valve Specialty Company
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Designers and Manufacturers of
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can be maintained by mopping with a weak cleaning solution.

Other features cited are that Conq-r-Dust can be applied as it comes from the container with no preparation or mixing required; it is water resistant, and it provides a gloss to improve the appearance of the floor. Wax or paint can be applied over it and resilient floors can be laid over it. It is said to be slip-retardant, have practically no odor and be nearly colorless.

Conq-r-Dust is applied on new concrete after the floor has been swept or vacuumed. A second coat is suggested if the floor is extremely porous. It can be applied to old floors also after a thorough cleaning. S. C. JOHNSON & SON, INC., RACINE, WIS.

Combination Air Conditioner Reduces Water Requirements

A combination air and water-cooled residential air conditioner has been designed for use in either water-short or high-water-cost areas, or where other restrictions have been placed on the use of water for air conditioning.

The new unit, known as the DA, reportedly uses less than 10% of the water required by conventional types, yet will provide maximum cooling and dehumidification on the highest temperature days. It has been designed for use with any existing forced warm-air furnace.

The new unit, available in 2 and 3-hp sizes, has a dual condenser system—one air-cooled, one water-cooled. Most of the time, it operates on the air-cooled compressor alone, but the outside temperature alone, but when the outside temperature reaches 95 F., the water-cooled condenser automatically turns on for a relatively brief period.

This is said to guarantee maximum capacity on high temperature days,

(*Continued on page 66*)

Heavy "Light" Tractor Is Versatile

A rubber-tired 42-hp wheel tractor, the International 300 Utility Model, has been designed for the industrial field.

Powered by an I-H C-169 gasoline engine, the tractor weighs 3,820 lb or about 1,000 lb more than tractors of comparable size and class. The added weight is said to provide greater traction and stronger power train and axles. The 300 is available either in a standard 5-speed transmission or torque converter drive. The converter gives ten speeds forward from 1.5 to 16.7 mph.

Specifications include a wheelbase of 75 in.; overall length, 118 in.; overall width, 59½ in.; clearance, rear axle, 19½ in., front axle, 20½ in.; turning radius, 9 ft 8 in.

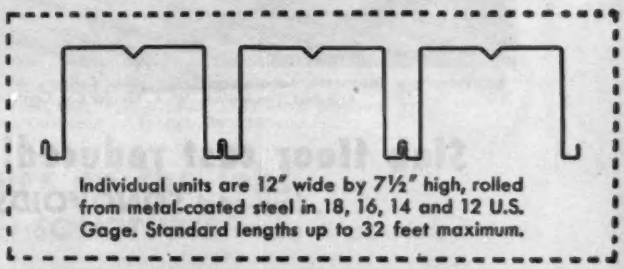
It is available with a power take-off —independent or transmission-driven —and a hydraulic equipment control permitting front and rear-mounted attachments to be controlled simultaneously or individually. Over 23 attachments are available as optional equipment. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

Now Span 32 Feet

with Robertson Long-Span Q-Deck

LIGHT WEIGHT • GREAT STRENGTH • EASY TO INSTALL • GOOD LOOKING

After considerable testing and research, H. H. Robertson Company is pleased to announce the availability of a new product much needed in modern construction—a steel deck that will span great distances with the required load-carrying capacity. This new *Long-Span Q-Deck*, now in production, carries with it all the basic qualities and advantages of Robertson's well known Standard Q-Deck. Tight side laps become standing seams and are caulked and mechanically fastened at regular intervals to act as a vapor barrier and for structural stability. Units are easy to handle and erect with a minimum crew. They install quickly and tightly because of precision manufacture. *Long-Span Q-Deck* fills a long felt need in schools, supermarkets and other buildings where longer single spans bring construction economies and design flexibility. Any standard insulation and built-up water-proofing can be used. Use the coupon to write for technical literature about this new Robertson product.



Individual units are 12" wide by 7½" high, rolled from metal-coated steel in 18, 16, 14 and 12 U.S. Gage. Standard lengths up to 32 feet maximum.

For supermarkets and schools much greater latitude of design is allowed by increasing deck span. Considerable saving in structural steel is made possible, and time and labor are cut down in the erection of the deck itself.

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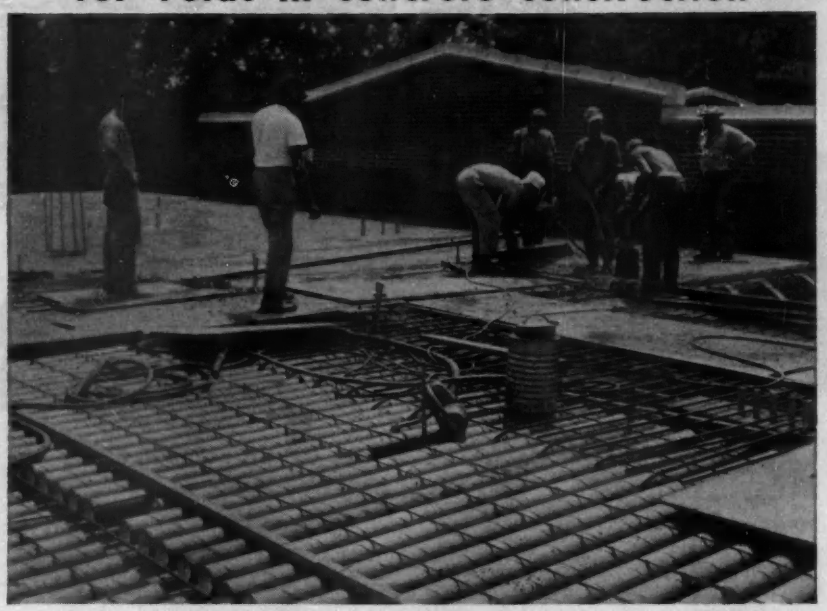

Veterinary Diagnostic Laboratory, Iowa State College, Ames, Iowa. James A. Dougher, Architect, Des Moines. W. A. Klinger Co., Contractor, Sioux City.

Slab floor cost reduced!
. . . *low-cost* SONOVOIDS® *make it possible*

Floor and roof slabs in this Iowa State College building contain voids created by SONOVOID Fibre Tubes. Slab weight was reduced which resulted in a savings on concrete and steel. Structural strength was not impaired.

Metal end closures were used in the SONOVOIDS and they were "tied" down by means of light weight steel reinforcing rods with spacers attached (see photo).

Easy to handle, low cost SONOVOIDS save time, materials and money. Use SONOVOIDS in concrete bridge decks, wall, floor, roof and lift slabs; also in concrete piles. For prestressed or poststressed precast units or units cast in place.

Available in lengths up to 50 feet or can be sawed to your requirements on the job, size 2.25" to 36.9" O.D. End closures available.

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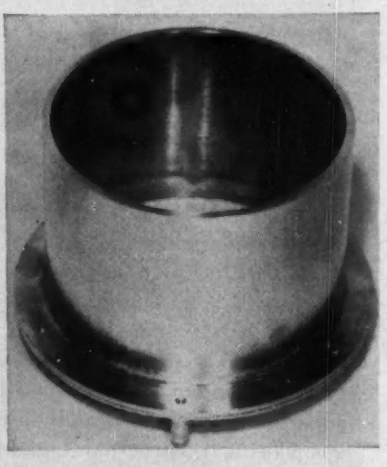
and, by having both types of condensers in one unit, the air conditioner overcomes the handicap of an air-cooled unit, and insures maximum capacity at all times.

According to the manufacturer, it uses 90% less water during the cooling season than a normal water-cooled air-conditioner, and, in addition, where there is no sewer system connected with the home, the water used by the unit can be used to sprinkle lawns or gardens. UNION ASBESTOS & RUBBER CO., HEATING AND COOLING DIV., 332 S. MICHIGAN AVE., CHICAGO, ILL.

Diesel-Electric Generators Cover a Wide Capacity Range

A new line of diesel-electric generator sets is designed to fill requirements in the 8 to 35-kw capacity range. The plants average 23% lower weight than the manufacturer's former models, and prices are 10% less than before.

Power is provided by 4-cycle full-diesel engines having electric starting on diesel fuel. A 12-v starting system battery charging generator is standard.



Replaceable Screen Reduces Cost of Routine Cement Tests

Long-life sieves, are offered as a means of reducing costs of routine quality control testing. The sieves, developed by Federal Portland Cement Co., are designed to allow the operator to replace the screen upon failure.

A savings in the cost of testing is realized when the cost of the replacement screen is compared to the cost of the replacement of the entire unit. The sieves are constructed of chrome plated brass and the screens meet ASTM Specifications. Custom Scientific Instruments, Inc., Kearney, N. J.

The manufacturer achieves small size by close coupling the engine and generator and by careful mounting of other components.

The series includes 40 models in 3 speed ranges—1200, 1500, and 1800 rpm. All have automatic voltage regulators and line voltmeters, as well as voltmeter selector switch and rheostat. The heavy-duty alternator is of the revolving field type with exciter integrally mounted. All sets are designed for continuous duty or for emergency-standby service with line transfer control for automatic starting in the event of power failure. Remote control is also offered.

60-cycle generators in the 1200-rpm speeds start at 8 kw and include 12.5, 20 and 25 kw capacities. For services where 1800 rpm speed is desired, sets in 10, 15, 25 and 35 kw are offered. Sets of 50-cycle frequency, starting at 8 kw and extending through 15, 20, and 25 kw, are also manufactured; these are 1500 rpm models. Voltage is 120, 120/240 or 240, as well as 120/208.

All models are mounted on a rigid all-welded steel base with radiator and fuel tank forming housing. Universal Motor Co., 536 Universal Drive, Oshkosh, Wis.

Fastener Package Gives Ramset Tool Greater Range

To simplify fastening problems, Ramset is offering a package which will permit a ¼-in. threaded-stud pipe fastener to be used in a ⅜-in. barrel. This means that a great deal of normal fastening in construction jobs can be made possible without changing the barrel of a ⅜-in. tool.

The double use of the ¼-in. fastener is made possible by replacing the ¼-in. plastic tip with a ⅜-in. plastic tip. Then a reuseable screw-on utility driver head is supplied for use on the threaded end of the stud making the ¼-in. fastener fit in the smaller barrel.

The package contains 100 ¼-in. fasteners fitted with ⅜-in. red plastic tips and ten reusable utility driver heads. Olin Mathieson Corp., 460 Park Ave., New York 22, N. Y.

Airtherm Siding Designed For a Specific Application

Engineered specifically for siding application, the new Airtherm line reportedly embodies features which make possible faster application, lower labor costs and quicker building occupancy. The siding comes in standard gauges and strengths and in special strengths for special jobs. It is available in aluminum, galvanized, or cold rolled painted steel. Airtherm Mfg. Co., 700 S. Spring, St. Louis 10, Mo.

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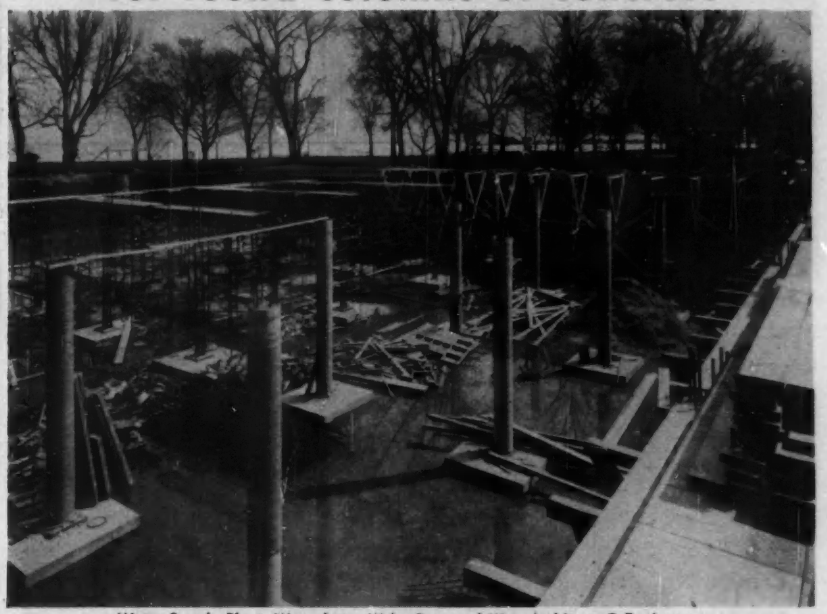
for round columns of concrete



Water Supply Plant, Wyandotte, Mich. Pate and Hirn, Architects & Engineers
Edward Schendel, Contractor Photo by Win Brunner

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*. . . low cost **SONOTUBES** make it possible*®

When it comes to erecting round concrete columns, do as the contractor for this Wyandotte, Mich. water supply plant did . . . use SONOTUBE Fibre Forms and save time, money and labor!

SONOTUBES are lightweight and easy to handle . . . take less time to erect because they require minimum bracing . . . economical to use because they are low in cost.

SONOTUBE Fibre Forms are approved by architects and engineers and widely used by contractors. Available in 26 sizes, from 2" to 36" I.D. up to 50' long. Can be ordered in specified lengths or sawed to your requirements on the job.

Use Sonoco's patented "A-coated" Sonotubes for finished columns; wax coated also available.

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Why? . . . because tapered, fluted steel Monotubes are of rigid, light-weight construction for simplified handling and rapid installation. There's easy on-the-job extension welding to virtually any required length, cut-offs can be re-used to eliminate waste, there's no need for special rigs or heavy driving equipment, and Monotubes are cold-rolled for added strength and long life.

These are but a few of the many reasons why experienced engineers, contractors and constructors specify Monotube piles. Catalog No. 81 is now available to answer many other piling questions. To get your copy, merely write The Union Metal Manufacturing Company, Canton 5, Ohio.

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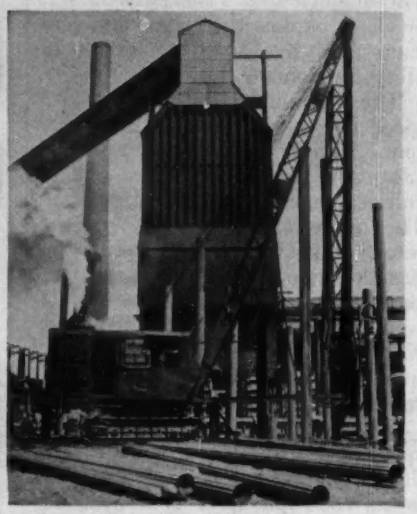
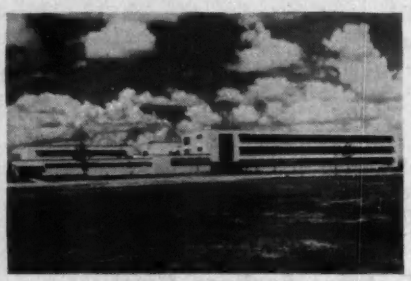


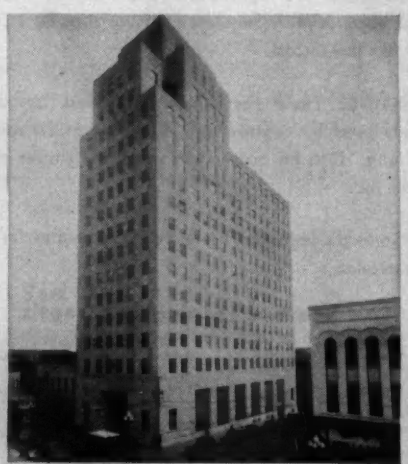
Steel Company of Canada Ltd., Hamilton, Ontario.



Bossier City High School, Bossier City, Louisiana.

National Gallery of Art, Washington, D. C.

Waterman Steamship Corp. Bldg., Mobile, Ala.



Commercial National Bank Building, Shreveport, La.

Pennsylvania R. R. Express Terminal Philadelphia, Pa.

Frame, Roof Precast

Pre-planning, precasting speed workshop erection

The trend towards prestressed concrete construction in Britain is emphasized again in the new technical college now being built for the education department of the Corporation of Kingston-upon-Hull.

The workshop block, a single story building with a shell roof, is 312 ft long by 192 ft wide, and is planned on a 24 ft by 24 ft grid. It is divided into four by 12 ft corridors running the width of the building.

The frame consists of a series of north-light bays of reinforced precast concrete members, post-tensioned after erection. The shell roof is also made up of precast units and each north-light and roof unit together span the 24 ft of the grid. The corridors have flat roofs, consisting of reinforced precast concrete slabs, which rest on tubular rollers to allow for expansion and contraction movements of the building.

Foundations are on piles because the subsoil above the boulder clay level is poor.

Large foundation beams provide a standard grid of supports for the suspended ground floor, thus assisting considerably in the standardization of its design and construction.

Most main services and many subsidiary services are concealed in a system of main and subsidiary ducts in the reinforced concrete suspended ground floor. Both main and subsidiary ducts are so arranged that they form the main beams of the floor construction. They also incorporate fixed-end sockets for the superstructure columns.

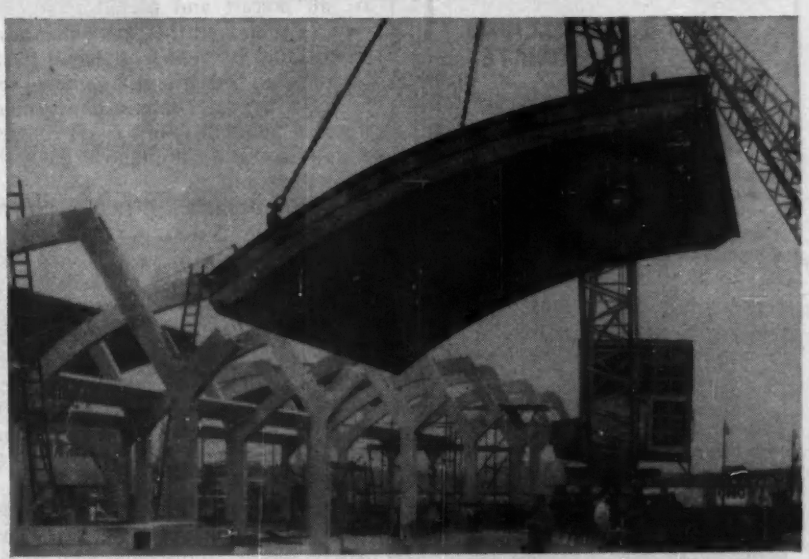
Part of the building has a lowered floor to permit the introduction of machinery bases isolated against the transmission of vibration. These are for the heat engines laboratory. The hydraulics laboratory floor incorporates a flume for experimental work.

Consultation between the architect, consulting engineer and contractor solved many of the erection problems before work started and enabled the contractor to progress, almost from the beginning, at a rate of eight bays of superstructure every two weeks.

Full-scale stressing and loading tests were carried out on the precast frames and the shell roof units at the beginning of the project.

The main frames are built up with

PRECAST FRAME consists of two units—a combination column-strut and curved rib.



ROOF UNIT, which is precast and prestressed, is lifted to position by derrick.

PRECASTING BED is long enough to produce eight prestressed roof units at once.

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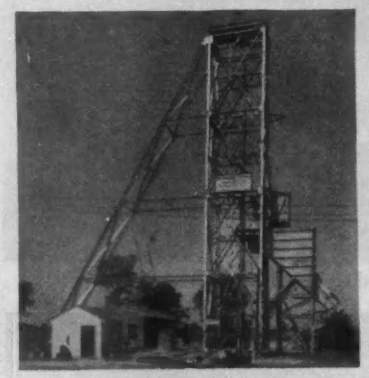
98 Greenwood Ave., Montclair, N. J.



SAFE—DEPENDABLE MAYO ALL-STEEL HEADFRAMES

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the precast units to form eight bay continuous portal frames. There are only two basic units: a combined column and north-light strut and the curved rib. The units, which are cast with formed holes, are placed in position by means of derricks. High-tensile bars are inserted; the joints are concreted, and the bars are stressed and finally grouted.

The gutter units are precast on the site, pretensioned sufficiently to withstand handling stresses, and are finally post-tensioned when in position. The system used can be readily adapted to this stressing by stages. These gutter units, when connected to the main frames, make a series of portal frames laterally.

Each unit of the shell roof is 2½ in. thick and measures some 16 ft x 24 ft, spanning in the 24 ft direction. Weight is about 7 tons. These units are all precast and pretensioned. In view of their size they are being cast on the site, in batches of eight, on a prestressing bed which has been set up in a bay of the previously constructed ground floor. Eight gutter units are cast simultaneously with eight roof units.

The prestressing bed is over 200 ft long and the 5 ton jacking head is some 20 ft wide. It can be operated uniformly over its full width and the total compressive force is about 450 tons.

To avoid bending moments being induced in the floor, rocker bearings are provided, which transmit the load axially. A rolled steel joist has been well anchored in the floor to act as a spreader.

The forces exerted by the prestressing wires, which are set approximately 15 in. above the floor slab, are counter-balanced by tie-bars which are buried in drain pipes in the ground 5 ft below the floor slab. The pipes permit freedom of movement of the tie-bars which can be reclaimed on completion.

The wires are stressed in pairs by the travelling jack which has a compensating device in the gripping head: the load is simultaneously taken up on the bars with a jack, in order to ensure that the channel uprights remain vertical.

To de-tension, the loads on the tie-bars are gradually released and the entire head arrangement is allowed to pivot about the rocker bearings until all the load is let off. To minimize the risk of damage to the threaded end of the tie-bars, knife-edge bearings have been provided behind the nuts.

The wooden forms rest on steel scaffold tubing bedded in mortar. This facilitates leveling up and also enables the forms to slide freely during detensioning. The ends of the forms of the roof units are steel plates gig-drilled for the one hundred and ninety-three O.2-in diameter steel wires. The rolled steel joist forms are similarly drilled. They span the full width of the bed, in order to avoid the vertical reactions of the sloping wires transmitting bending moments to the floor slab.

A high quality concrete is required and this is obtained by careful site control. The concrete mix is 1:1:2 with a water/cement ratio of 0.34. Washed river sand and gravel are used and with rapid-hardening cement 5,000 psi concrete is obtained in two days, enabling de-tensioning to take place. It is placed, by derrick, from bottom-dumping skips, and compacted with the aid of a pneumatically-vibrated, travelling tamper, shaped to the contour of the roof.

One of two cranes is used to remove the units and serve a second crane at work on the superstructure. The units are lifted in a frame which consists of two shaped channels, one at each end of the unit, welded tubes connecting the channels and a pyramid sling. This frame is fixed to bolts cast in the concrete shell and later burnt off.

Architects were F. Gibberd and Consulting Engineers Scott & Wilson, Kirkpatrick & Partners both of London.

Scotland Will Proceed on $3¾-Million Hydro Scheme

The North of Scotland Hydro-Electric Board has been authorized to proceed with the proposed extension of the Tummel Valley hydro-electric project. Cost of the scheme is estimated at $3,752,000.

Two new generating stations with a total capacity of 3,900 kw will be built with one to be erected on the eastern shore of Loch Ericht, at the outlet of the existing tunnel from Loch Garry—and the other to be located on the Allt Cuarich, a tributary of the River Truim, near Dalwhinnie in Inverness-shire.

The existing aqueduct which leads water from the Dunalastair reservoir to the Tummel Bridge power station will be enlarged and the water level raised, increasing the kilowatt capacity and the output of the Tummel Bridge power station and of the Clunie and Pitlochry power stations.

LEGAL

Withdrawal of Bid Allowed Prior To Its Acceptance

The essential elements that give rise to a contract are an offer and an acceptance. Until an acceptance is received, an offer can be withdrawn.

A federal court has held[1] that where the offer is a bid, the bid can be withdrawn prior to acceptance.

The case involved a bid, containing a mistake, for furnishing bolts to a government agency. Learning of the mistake, the bidder notified the government and tried to withdraw the bid before it had received a letter notifying it of the acceptance of the bid.

Forced to go ahead with the contract, the bidder furnished the bolts and then sued to recover the losses it sustained because of the government's refusal to permit it to withdraw the bid.

Ruling that no binding contract existed, the court held the bidder was entitled to recover the actual losses, if any, it sustained. The recovery, it said, was limited to the difference between the bid and that of the next lowest bidder, or in the alternative, the reasonable value of the bolts furnished, subject to the limitation of actual loss.

The court distinguished the situation from that existing after bids have been opened. In the latter case, said the court, a "well-established rule of law seems to be that after bids have been opened the bidder cannot withdraw his bid unless he can prove that the desire to withdraw is due solely to an honest mistake and that no fraud is involved."

(1) Rhode Island Tool Co. v. United States, 128 F. Supp. 417, U. S. Court of Claims, Feb. 8, 1955.

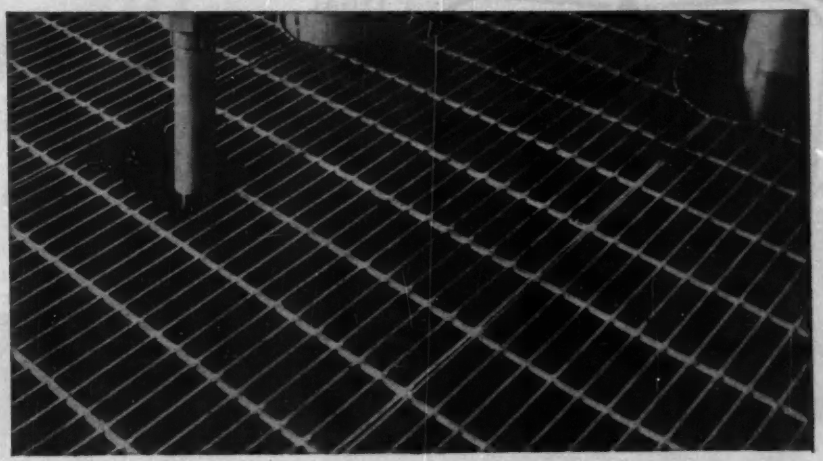
An Owner Held Not Liable For Injuries at Job Site

When an employe is injured on a job as the result of the negligence of the contractor who hires him, is the owner liable? Ordinarily the answer is "no," says an Ohio court.[1]

In this case, the contractor was using a crane to unload steel at a job site. The crane hit some electric wires and an employe was injured. He unsuccessfully tried to sue the owner.

In dismissing the case, the court said the prevailing law is this:

• "Where an independent contractor undertakes to do work for another in the very doing of which there are elements of real or potential danger and one of such contractor's employes is



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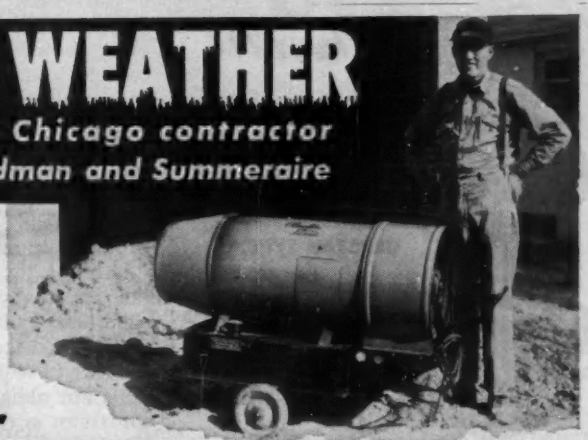

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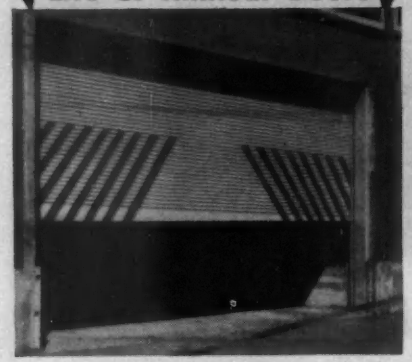

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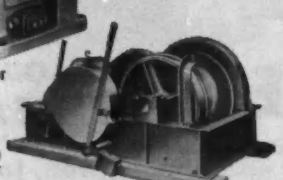

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injured as an incident to the performance of the work, no liability for such injury ordinarily attaches to the one who engaged the services of the independent contractor.

• "One who engages an independent contractor to do work for him ordinarily owes no duty of protection to the employes of such contractor, in connection with the execution of the work, who proceeds therewith knowing and appreciating that there is a condition of danger surrounding its performance."

(1) Schwarz v. General Electric Realty Corp. 126 N. E. 2d 906, Supreme Court of Ohio, May 18, 1955.

Some Alternative Remedies For Defective Performance

Various remedies are available to an owner when he doesn't get what he bargained for in a building contract. He can take what he got and seek adjustments from the contractor, or refuse it altogether and require its removal.

Such a situation came before the Supreme Court of Louisiana in a case arising out of a contract to install a heating plant. The plant as installed was unsatisfactory and failed to accomplish its intended purpose. It was impracticable to make alterations so that it would function properly. The owner brought an action against the contractor to recover as damages the amount paid to the contractor, plus the cost of removing the defective equipment. The court allowed the owner a recovery.[1]

The court, quoting from another case,[2] stated: "Where the contractual work fails to measure up to the specifications of the contract and nothing can effectually remedy the existing condition and the owner is forced thereby to make alterations in his plans in order to acquire a useable structure, he is not obligated to settle with the contractor in conformity with the doctrine of 'substantial performance,' unless he desires to use whatever the contractor has created. To elucidate, in such a situation the owner may say to the contractor that nothing that he may do will produce the building which was contemplated in the plans, and that, therefore, the contractor will be required to entirely remove what he has erected. On the other hand, the owner may say (or so act) to the contractor that what he has erected is not the structure which was designed, but that, the owner, nevertheless, by effecting changes in his plans, can use what the builder has constructed. If he decides to follow this alternative, he is liable to the contractor for what has been erected, less the amount it may cost him to secure a useable building, even though the construction is not such as was contemplated by the plans."

(1) Ilgerfritz et al. v. Radalec, Inc., 7 So. 2d 903, Supreme Court of Louisiana, July 1954.

(2) Montague v. Milan, La. App., 67 So. 2d 351, 354.

Substantial Performance Gives Right To Recovery

As a general rule, a party who has failed to perform his contract is not entitled to compensation. But courts have made an exception for construction contracts and allow a recovery where there has been substantial performance of the contract.

In discussing performance under a building contract, an Iowa court said "a technical, exact and perfect performance is not necessary. Substantial performance is all that is required. Where there is substantial performance, the builder is entitled to the contract price less reasonable damages on account of slight defects in performance."

Substantial performance, it said, means performance of all the essentials necessary to the full accomplishment of the purposes for which the thing contracted for has been constructed, except for some slight and unintentional defects which can readily be remedied or for which an allowance covering the cost of remedying can be made from the contract price.

(1) Huffman v. Hill, 65 N. W. 2d 205, Supreme Court of Iowa, June 15, 1954.

Insurer Sues Contractor Under Implied Warranty

When a heating contractor agrees to relocate and reinstall a furnace, he is bound by an implied warranty that the work will be done in a good and workmanlike manner and in accordance with sound engineering practice. In an Ohio case, the work of a heating contractor was so defective that a fire resulted. An insurance company paid the owner for the damages sustained by the fire. It was subrogated to the rights of the owner and could recover from the contractor the damages sustained because of the faulty and defective manner in which the work was done.[1]

(1) Glens Falls Insurance Company v. Standard Oil Company, 127 N.E. 2d 46, Court of Appeals of Ohio, Oct. 23, 1954.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

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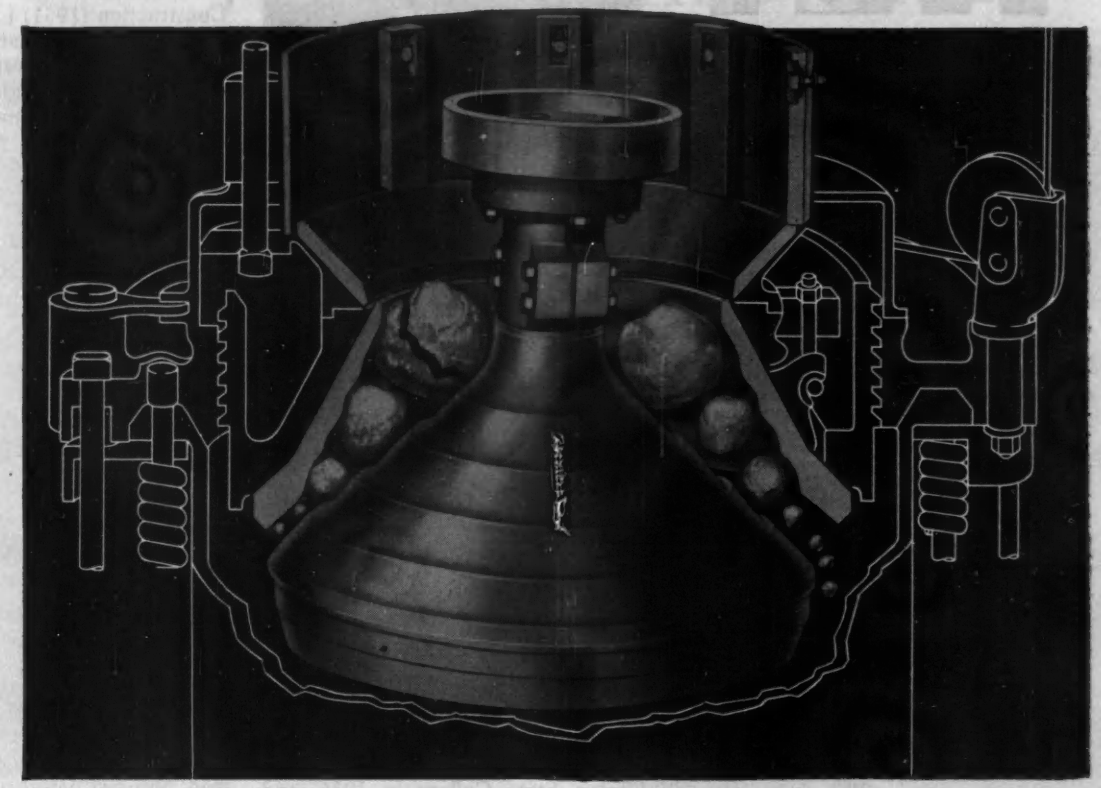

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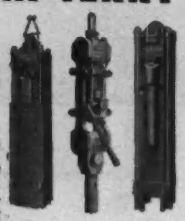

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MEN AND JOBS

Col. Graham Assigned As District Engineer

Col. Jackson Graham has been assigned to the Portland, Ore., District, Corps of Engineers, as district engineer, succeeding Col. James U. Moorhead, recently transferred to the Far East Command, with headquarters in Toyo.

During the past year, Col. Graham has commanded the 934th and 931st Engineer Aviation Groups, engaged in building and maintaining airfields in Korea.

He joined the Corps after obtaining his civil engineering degree from Oregon State College in 1936, and in 1953 became Assistant Chief of Engineers for personnel and administration. In addition to various assignments in the Pacific and in Europe, his career has included two years of service as staff engineer with the Joint Brazil-U. S. Military Commission with headquarters in Rio de Janeiro.

Area Offices Established For Northern Radar Work

Under the impetus of the multi-million dollar radar defense construction program for the U. S. Air Force in Canada, Labrador and Newfoundland, the Eastern Ocean District of the Corps of Engineers has appointed two new area engineers to supervise the building of the northern aircraft warning stations.

Lt. Col. Jack R. Harris has been area engineer for the Canadian phase of the project, with headquarters in Ottawa, and construction of the Northeast Air Command Terminal Mid-Canada Line in Labrador and Newfoundland will be under supervision of Lt. Col. Anthony Gelardi, operating in Goose Bay, Labrador.

Prime contractor for the $6-million Canadian program, designed by Urbahn-Brayton & Burrows, New York architect-engineers, is Defense Construction (1951) Ltd., a Canadian government corporation. A subcontract will be awarded to a Canadian architect-engineer for site adaption of the standard drawings, and construction will be subcontracted to three different firms.

The Labrador-Newfoundland stations were designed by Metcalf & Eddy of Boston, and an $11-million contract for their construction was awarded last August to Drake-Merritt, a joint venture composed of Merritt-Chapman & Scott and Johnson, Drake & Piper International Corp., both of New York. Part of the work has been subcontracted to Terminal Construction Co., Ltd., of Montreal.

Men and Job Briefs . . .

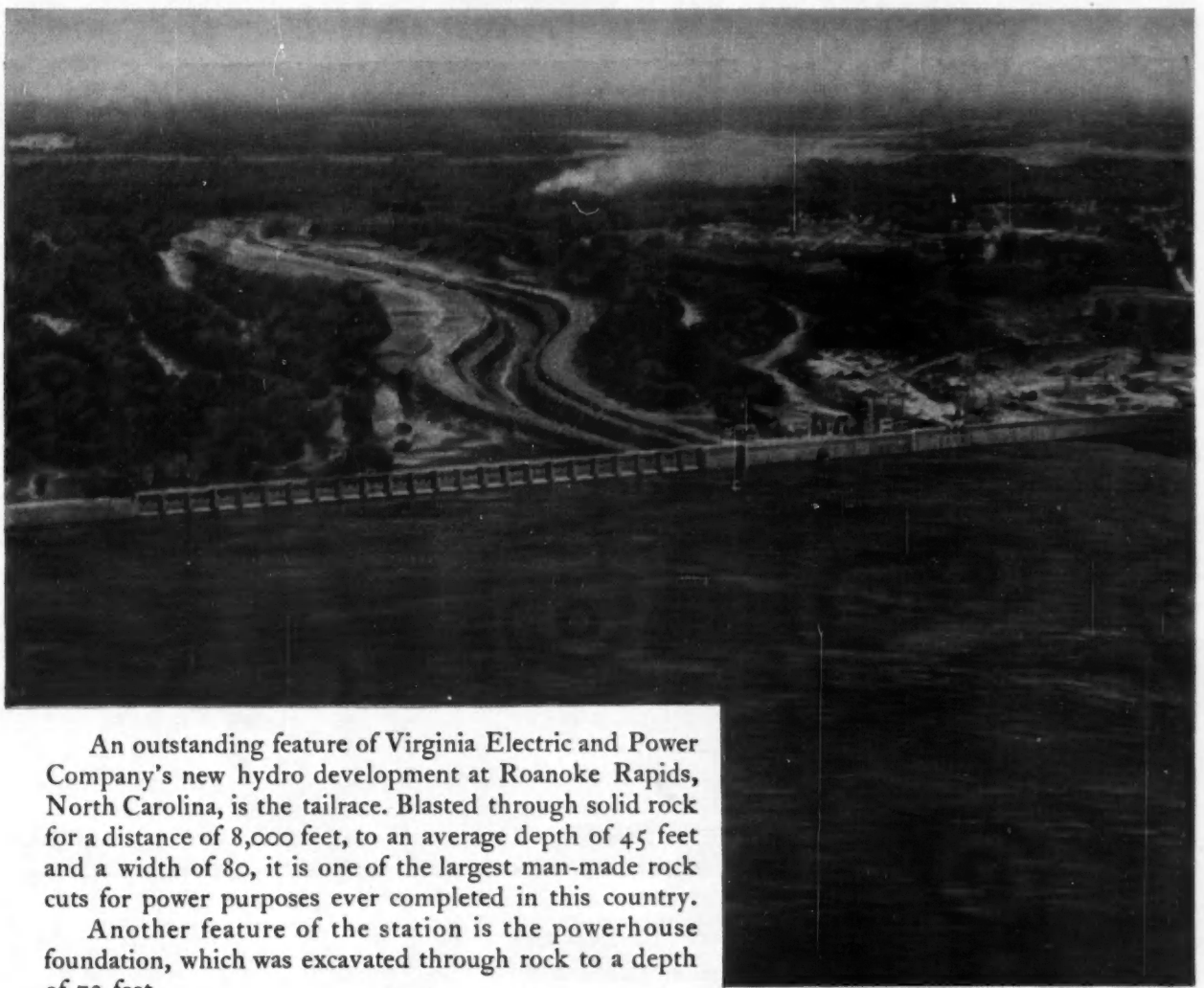
• **Associations**—The North Carolina Highway Employees Association elects **R. L. Brown** of Charlotte president . . . **G. R. Dawson,** vice president of Dawson, Wade & Company, Ltd., is named president of the Heavy Construction Association of British Columbia . . . **James R. Cranwell,** vice president of the Pennsylvania Railroad, becomes president of the American Standards Association.

• **Corps of Engineers**—**Lt. Col. A. Zacherle,** formerly with the research development division in the Office of Chief of Engineers, becomes executive officer in the Seattle District, succeeding **Col. W. T. Bradley,** who is assigned as Seattle assistant district engineer . . . **Arthur L. Henny** is named director of the Columbia River "308" Review Section in the Portland District.

• **Careers**—The California Department of Public Works appoints **C. M. Gilliss** to the newly created post of deputy director . . . **G. Bryce Bennett,** former materials engineer for the Idaho Department of Highways, is named assistant state highway engineer for the department.

Bernard D. Murphy, who recently returned from Iraq where he served as chief of the Irrigation and Flood Control Design Division in the Iraqui Ministry of Development, joins the

MAN-MADE ROCK CHANNEL FOR MORE KILOWATTS



An outstanding feature of Virginia Electric and Power Company's new hydro development at Roanoke Rapids, North Carolina, is the tailrace. Blasted through solid rock for a distance of 8,000 feet, to an average depth of 45 feet and a width of 80, it is one of the largest man-made rock cuts for power purposes ever completed in this country.

Another feature of the station is the powerhouse foundation, which was excavated through rock to a depth of 72 feet.

The concrete dam is 3,050 feet long, and provides a maximum net head of 81 feet.

Four adjustable blade propeller type turbines in the semi-outdoor powerhouse add 100,000 kilowatts to the VEPCO system.

View from above dam at Roanoke Rapids Power Station. The project, which will serve the fast-growing Virginia-North Carolina industrial area, requires a reservoir nearly 9 miles long, with a surface of 4,900 acres. Construction was by Stone & Webster Engineering Corporation.

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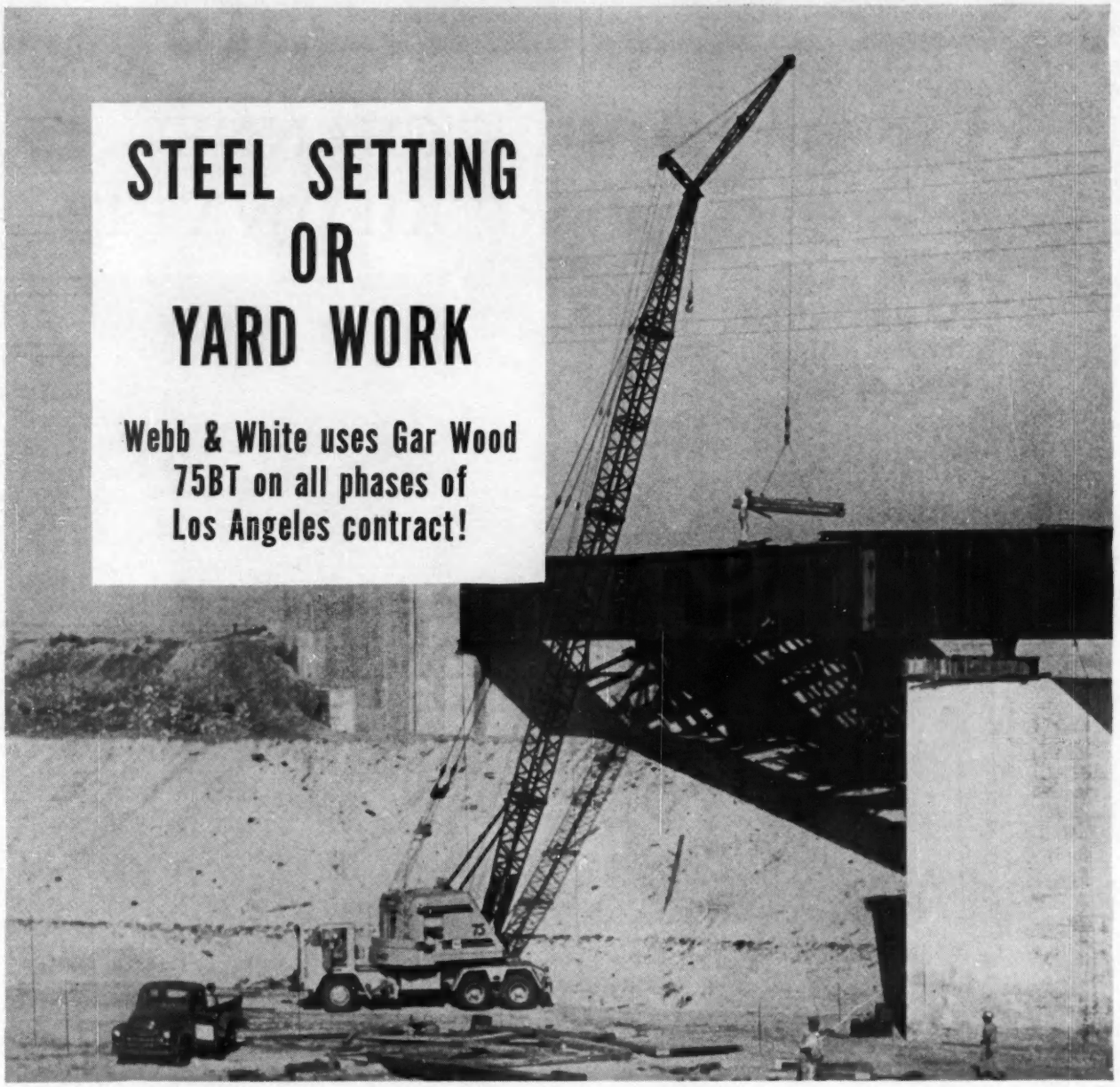

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Pennsylvania Department of Forests and Waters as chief of the Flood Control Division.

• **Business**—The Bess Construction Co., Pittsburgh, Pa., names **Russell M. Jenkins** chief engineer . . . **William A. Loumos,** formerly an engineering supervisor for The Austin Company, Cleveland, Ohio, engineers and builders, becomes district engineer for the company's eastern district, with headquarters in Roselle, N. J. . . . **D. A. Firmage** leaves Patchen & Zimmerman, engineers in Augusta, Ga., to join the civil engineering faculty of Brigham Young University in Provo, Utah.

Fred L. Weiss, superintendent of construction at the TVA Shawnee steam plant since 1951, joins Ebasco Services, New York engineering firm, and will be project superintendent on Noxon Rapids Dam, Clark Fork River, Mont. . . . **Herbert Goodkind,** last associated with D. B. Steinman as project manager on the Mackinac Straits Bridge in Michigan, is now associated with Goodkind and O'Dea, consulting engineers with offices in New Jersey, New York and Connecticut.

Clarence E. Rinne, structural engineer formerly with the San Francisco consulting firm of Huber & Knapik, is named resident partner of the new Palo Alto, Calif., office of Hall, Pregnoff & Matheu, San Francisco structural engineers . . . **Victor E. Cole,** a civil engineer with the Kaiser organization for 15 years, is appointed vice president and assistant general manager of Kaiser Gypsum Co., Inc.

D. W. Rader, associated with Cunningham-Limp, general contractors in Detroit, for the last 10 years, is elected vice president . . . U. S. Steele's American Bridge Division names **C. F. Raleigh** contracting manager and **E. C. Rooney** contracting engineer for its San Francisco district.

• **Retirements**—**A. I. Rivett,** safety engineer for the California Division of Highways, after 40 years in state service . . . **Fairfax D. Kim,** supervisor of concrete dam analysis at the Bureau of Reclamation's engineering headquarters in Denver, Colo., after 28 years of government service during which he gained wide recognition for his work on designs for Hoover Dam . . . **Col. William H. Sturgeon,** from the U. S. Air Force. Last assigned to the Installations Representative Office for the South Pacific Region, he's been monitoring a $450-million construction program.

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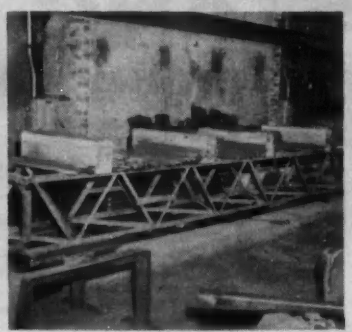

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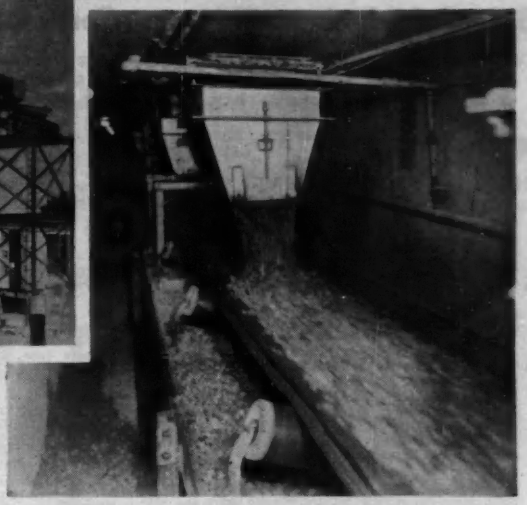
Thoroughly proved under "back-breaking" loads, every Heltzel-Ohio conveyer section must pass rigid weight tests far in excess of anything it will ever have to carry in the field.

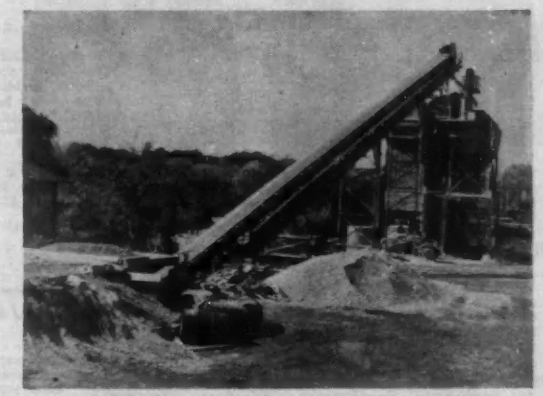
ECONOMICAL SMALL SPACE HANDLING is possible with the discriminate use of switchback conveyers. In a number of cases Heltzel-Ohio engineers have devised 180° or full switchbacks to get maximum use of the space at hand.



TUNNEL CONVEYERS feed from the bottom of the stockpile to cut handling to a minimum. Special Heltzel-Ohio tunnel gates make this system foolproof. Controlled from central panel.

Greater Profits

Heltzel-Ohio Custom Aggregate Handling Systems slash costs for both large and small operators!



ECONOMICAL HANDLING FOR SMALL OPERATORS is a Heltzel-Ohio specialty. Our engineers have cut costs for hundreds of small tonnage operators with simplified, inexpensive, easily controlled systems.

The one place in your operation that you can cut costs without cutting quality is the handling of materials. The research of one leading publication pointed up the fact that 8 out of 10 contractors and yards could realize greater profits simply by bringing their handling equipment up to date.

In a recent check one operator looked over his figures and found it cost him in excess of 28 cents to handle the materials needed for a yard of concrete. He called in Heltzel-Ohio engineers who devised a system that cut this cost to approximately 4 cents a yard. The savings quickly paid for the equipment and now enables him to sell top quality at competitive prices and with much faster service.

Consider your operation. Let a Heltzel-Ohio man show you how modern equipment will pay for itself in short order. How it will put you in the best competitive position possible. And when you think of materials handling, remember Heltzel-Ohio engineers are specialists —designing and building materials-handling equipment specifically for the concrete industry. Get the last word from those who know. Send in the coupon today!

SPECIALISTS IN HANDLING SYSTEMS FOR THE CONCRETE INDUSTRY

HELTZEL *Ohio* **HANDLING SYSTEMS**

Heltzel-Ohio Handling Systems Div. 57000 Thomas Road
Heltzel Steel Form & Iron Co., Warren, Ohio

I'm interested in reviewing my handling operation. I would like to have a Heltzel-Ohio engineer look it over at no obligation.

Name_____

Company_____

Address_____

City_____ State_____

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

Conn., Manchester—BA 11/8—Town, George H. Waddell, mgr., Town Office Bldg., sewage treatment plant, Olcott St. $836,000. Plans deposit $50. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs. CD 10/18/48.

▲† Mass., Falmouth — HOUSING — BA On Or About 11/20—Purch. & Contg. Officer, Otis Air Force Base, Falmouth, constr., landscaping, etc. 505 standard family housing units, Otis Air Force Base, $5,500,000. Plans deposit $25. CD 10/12.

▲† N. H., Portsmouth—TAXIWAY-APRONS—BA On Or About 11/22—U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass., taxiway and aprons: (1) approx. 240,000 sq. yds. 13-in. Portland c. conc. pavement; (2) approx. 17,000 sq. yds. 2-in. b. conc. shoulders; (3) place approx. 500,000 cu. yds. fill from common and borrow excavations; (4) drainage ditch, incl. seven drop structures, one box culvert and one combination box culvert and drop structure; (5) underapron elements of the hydrant fueling sys.; (6) topsoiling and seeding, Portsmouth Air Force Base. ENG-19-016-56-37. Est. $2,000,000-$2,500,000. Plans deposit $10. CD 12/6/51.

▲ Mass., Boston—BA 11/25—City, Dpt. P. Wks., City Hall Annex, furnish, erect incinerator equip., South Bay Incinerator, South Boston, $1,000,000. Plans deposit $100, refundable. CD 11/29/51.

BUILDINGS—SLC

▲ Mass., Waltham—SCIENCE—Brandeis University, Dr. A. L. Sachar, pres., 415 South St., soon lets contract science bldg. $1,000,000. Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, archts. CD 10/8/54.

▲ J. F. Rand & Son, 47 Sudbury St., Boston, Mass. CA $1,170,383. Acton-Boxboro Regional High SCHOOL, ACTON-BOXBORO, MASS. Acton-Boxboro Regional High School Dist., High School, Acton, Mass. CD 9/20, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ V. Barletta Co., 10 Whipple Ave., Roslindale, Mass. CA $13,583,491. est. $15,000,000. Contr. KL, tunnel north approach etc. John F. Fitzgerald Expressway between Oliver and Kneeland Sts., Boston, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. CD 10/6, under LB.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Dextone Co., 166 Chapel St., New Haven, Conn. LB $185,030, est. $200,000. fabricating, del. prestressed concrete beams, Worcester.

CONNECTICUT—State Hy. Comn., State Office Bldg., Hartford,
Conn.—New England Dredge & Dock Co., 60 S. Water St., New Haven, Conn. LB $524,701, hy. reconstr., grading, bulkhead at Brewery Street channel, New Haven;
Conn.—MacDonald Constr. Co., 84 Market St., Newington, Conn. LB $236,725. hy. Rte. 138, Griswold-Voluntown 57-53. Bids Oct. 3. CD 9/21.

▲ CONNECTICUT—State Hy. Comn., State Office Bldg., Hartford,
Conn.—Klevens Corp., Federal St., Yonkers, N. Y., LB $1,191,065, superstructure for Greenwich-Killingly Expressway Bridge over Norwalk River, Proj. 306-09, Contr. 2;
Conn.—Mariani Constr. Co., 222 Forbes Ave., New Haven, Conn., LB $3,526,374, substructure, grading, drainage Norwalk River Bridge, East Ave., Proj. 306-08. Bids Sept. 26.

BUILDINGS—LB & CA

▲ Rugo Bros. Constr. Co., 80 Boylston St., Boston, Mass. CA $1,530,609. est. $1,750,000. high SCHOOL Shawsheen Rd., ANDOVER, MASS. Town, High School Bldg. Comn., Andover, Mass. CD 9/21, under LB.

Thomas Constr. Co., 93 Austin Ave., East Haven, Conn. LB $566,000. Conn. 56-202-A6, SECONDARY SCHOOL, Clark Lane School Site, WATERFORD, CONN. School Bldg. Comn., Waterford, Conn. Bids Oct. 11. CD 10/3.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† N. J., Wrightstown—SQUADRON OPERATIONS—BA On or About 11/4—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. squadron operations bldg., other bldgs., storm and sanitary sewers, McGuire Air Force Base, ENG-36-109-56-25. est. $500,000. Porter, Urquhart & Beavin, 415 Frelinghuysen Ave., Newark, archts.-engrs. CD 9/2.

† N. J., Wrightstown—LIGHTING—BA 11/10—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., taxiway airfield lighting, McGuire Air Force Base. $100,000. Porter, Urquhart & Beavin, 415 Frelinghuysen Ave., Newark, archts.-engrs. CD 9/2.

† N. Y., Fort Jay—FERRY SLIPS—BA About 11/17—U. S. Eng., 111 E. 16 St., New York, Zone 3, ferry slips. $500,000-$1,000,000. Wilcox & Erickson, 11 E. 44 St., New York, Zone 17, archts. CD 7/18, under LB.

† N. Y., Niagara Falls—MISC. BLDGS.—BA 11/17 U. S. Eng., 111 E. 16 St., New York, Zone 3, misc. bldgs. and approach lighting, At Niagara Falls Air Force Base, $500,000-$1,000,000.

† N. Y., Westhampton—BULK STORAGE BLDG.—BA 11/17—U. S. Eng., 111 E. 16 St., New York, Zone 3, GAR 1 bulk storage bldg., rocket storage bldg., Unit B chapel, Suffolk Air Force Base. $100,000-$500,000. CD 10/7/54.

▲† N. Y., Plattsburgh — FACILITIES — BA 11/22 — U. S. Eng., 111 E. 16 St., New York, Zone 3, air force facilities, addnl. bldgs. at Plattsburgh Air Force Base. $1,000,000-$3,000,000.

▲† N. Y., Plattsburgh—MISCELLANEOUS BLDGS.—BA About 11/22—U. S. Eng., 111 E. 16 St., New York, Zone 3, miscellaneous bldgs. Package No. 3, at Plattsburgh Air Force Base. $1,300,000-$3,000,000.

BUILDINGS—BA

▲ N. Y., Rye—OFFICE—BA About 11/1—Continental Baking Co., 630 Fifth Ave., New York, Zone 20, (selected list bidders), 2 story office, 1 story laboratory, 18 acre tract between Theall Rd. and Theodore Fremd Ave. $1,000,000. CD 6/28.

▲ N. Y., New York—SCHOOL—BA 11/15—Director Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr. junior high school 44, W. 76 and 77 Sts. and Columbus Ave., Manhattan Boro. Plans deposit $35. CD 9/2.

▲ N. Y., Brooklyn—SCHOOL—BA 11/25—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, P. S. 262 Underhill Ave. and Bergen St., $1,724,000. Plans deposit $24 general constr., $8 plumbing & drainage, $8 heating & vantilating $8 electrical work and lighting fixtures. CD 1/20.

† N. J., New Brunswick—TRAINING CENTER—Bids Asked—U. S. Eng., 111 E. 16 St., New York 3, N. Y. 400-man unit Army Training Center, $100,000-$500,000. Extended date. A. Davis & Son, 40 Journal Sq., Jersey City, archts. CD 7/19.

BUILDINGS—SLC

Md., Essex — DIAL CENTER — Chesapeake & Potomac Telephone Co., 5 Light St., Baltimore, Zone 2, soon lets contract, (selected list bidders) brick, concrete, steel Essex Dial Center addn. Taylor & Fisher, 103 W. Hamilton St., Baltimore, Zone 1, archts.

N. Y., Elmhurst — HEALTH INSURANCE CENTER — Health Insurance Plan of Greater N. Y., 7 W. 12 St., New York, Zone 3, soon lets contract, 2 story Health Insurance Plan Center, Queens Blvd. $344,000. A. W. Geller, 333 E. 23 St., New York, Zone 10, archt. CD 9/26.

HEAVY CONSTRUCTION—LB & CA

▲† Michael Contr. Co., 142 19 St., Brooklyn, N. Y. CA $1,124,822. Special AAA Facilities, Millersport, NEW YORK. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 9/12, under LB.

† Great Lakes Dredge & Dock Co., 17 Battery Place, New York 4, N. Y. CA $276,859. partial dredging of shipyard basin, U. S. Naval Shipyard, NOY 90341, Spec. 49019, BROOKLYN, N. Y. Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York 7, N. Y. Bids Sept. 15. CD 9/9.

Wortmann & Sons, Inc., 109 E. 29 St., New York 16, N. Y. CA $697,162. constr. foundations for International Arrival Bldg. and airline wing bldgs. at New York International Airport, Contr. NYA-650-010, IDLEWILD, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Oct. 11. CD 9/27.

Edenwald Contr. Co., 151-45 Sixth Rd., Whitestone, N. Y. LB $284,450. (7 bidders). Contr. No. 562 wid'n., regulating and 3 in. sheet asph. repaving pavement roadway on Third Ave. from E. 50 to E. 70 Sts., NEW YORK, N. Y. President Manhattan Boro, Municipal Bldg., New York 7, N. Y. Bids Oct. 14. CD 10/4.

Macasphalt Constr. Corp., 33-15 Lawrence St., Flushing, N. Y. LB $163,829. (5 bidders) Contr. TB-77, wid'n. regulating, repaving with sheet asph. pavement the roadway of Third Ave. from E. 116 St. to E. 128 St., NEW YORK, N. Y. Triborough Bridge and Tunnel Auth., Admin. Bldg., Randall's Island, New York 35, N. Y. Bids Oct. 13. CD 10/4.

† Paul M. Sterling Co., 114 Liberty St., New York 6, N. Y. LB $166,917. (4 bidders) base maintenance shop addn., Plattsburgh Air Force Base, ENG-30-075-56-118, PLATTSBURGH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Oct. 13. CD 9/20.

▲† Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, N. Y. LB $1,283,817. (2 bidders). airfield facilities, package No. 1, grading, POL facilities at Plattsburgh Air Force Base, ENG-30-075-56-92, PLATTSBURGH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Oct. 13. CD 9/20.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Cumberland Contg. Co., P.O. Box 507, Cumberland, Md. LB $324,954. surf., resurf., relocation 1.419 mi. U. S. Rte. 220, Contr. A 461-4-620, Allegany Co. Bids Oct. 11. CD 10/4.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Williams Constr. Co., Inc., P.O. Box 145, Baltimore 20, Md. LB $830,608. cloverleaf interchange, incl. dual steel WF beam bridge, paving 2.046 mi. connecting access roads, Baltimore County Beltway, Contr. 635-30-420, Baltimore Co. Bids Oct. 11. CD 9/27.

DELAWARE—State Hy. Dpt., Hy. Administration Bldg., Dover,
Del.—Henry C. Eastburn & Son, Newark, Del., LB $770,012, addnl. lane along Rte. 13, from south of Greenwood to Farmington forming dual hy. Kent and Sussex Counties. CD 9/20;
Del.—Standard Bituithic Co., foot of Brill St., Newark, N. J., LB $156,440, alterations at intersections along U. S. Rte. 13, east of Dover, Kent Co. Bids Oct. 11. CD 9/30.

BUILDINGS—LB & CA

▲ Centre City Homes, c/o N. M. Obedin Co., 124 Jackson St., Hempstead, N. Y., Owner Builds. $7,000,000. 512 HOUSES on tract at Shipman and Deer Park Aves., BABYLON, N. Y.

▲ Southwind Estates, c/o Bonded Realty Corp., Sunrise Hy., Lindenhurst, N. Y., Owner Builds. $1,000,000. 80 HOUSES on 30 acre tract at Udall Rd. south of Sunrise Hy., BABYLON, N. Y.

(Continued on page 83)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

USE...

THREADED CONES for SUPERIOR CONE-FAST COIL TIES

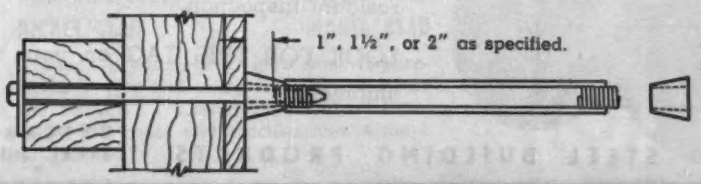
Pat No 2,335,338

Cut Form Costs by Permitting Extra Fast Erection of Panels

A direct way to cut forming costs is to use new Superior *Threaded* Coil Cones with Cone-Fast Coil Ties. Where cones have to be dependably held in place, *Threaded* Coil Cones are practically a "must".

Previously, Coil Cones were held onto the extended coils by friction alone. Now, a couple of threads in the cone fix Coil Cones securely to the Coil Ties. Here's another advantage . . . units can be bench assembled with the assurance that they will arrive at the installation point intact! *Threaded* Coil Cones cannot be knocked off the Coil Ties when the opposing form is being applied. When unscrewed with a cone wrench, the threaded Coil Cones automatically back themselves out of the wall.

Cone-Fast Coil Ties with threaded Coil Cones are supplied for ½" to 1¼" Coil Bolts, with safe load capacities from 5,000 lbs. to 36,000 lbs. Working parts (cones and bolts) are returnable for credit.



For further details refer to Sweet's Catalog or request Catalog 500.

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NAILABLE STEEL JOISTS • LONGSPANS • BOWSTRING ROOF TRUSSES • METAL DECK • V-LOK STEEL FRAMING • STRUCTURALS

(Continued from page 80)

Briar Point Park, c/o Stanley J. Shaftel, archt., 166-21 90 Ave., Jamaica, N. Y. Owner Builds. $600,000. 50 HOUSES on tract at Sunrise Hy. west of Brentwood Rd., BRENTWOOD, N. Y.

Fred L. Hewes Constr. Co., 152 W. 44 St., New York 36, N. Y. CA Est. $600,000. ELEMENTARY SCHOOL, BRIARCLIFF MANOR, N. Y. Union Free School Dist. No. 2, High School, Briarcliff Manor, N. Y. Bids Sept. 13. CD 8/12.

▲ **HRH Constr. Corp.,** 16 W. 46 St., New York 19, N. Y. LB $8,586,000. (9 bidders). general contract, SUPREME COURT, Brooklyn Civic Center, Phase B, BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Oct. 13. CD 10/6;
Heating Maintenance Corp. of N. Y., 220 E. 138 St., New York 51, N. Y. LB $2,324,300. heating work. (Brooklyn, N. Y.);
John G. Heilman Co., Inc., 507 E. 76 St., New York 21, N. Y. LB $1,782,152 (6 bidders). electric work (Brooklyn, N. Y.);
Joseph F. Egan, Broadway, Jackson Heights, N. Y. LB $462,900. plumbing work. (Brooklyn, N. Y.).

Helman Homes, Inc., 3133 Brighton Seventh St., Brooklyn, N. Y. Owner Builds. $738,000. 41 HOUSES at 1213-1264 East 98 St., BROOKLYN, N. Y. Mac L. Reiser, 186 Joralemon St., Brooklyn 2, N. Y., archt.

Birchwood Park Homes, c/o Stanley H. Klein, archt., 89-31 16 St., Jamaica, N. Y. Owner Builds. $480,000. 30 HOUSES on tract at Jericho Turnpike east of Commack Rd., EAST HUNTINGTON, N. Y.

▲ **Country Village Homes,** c/o Tryion Realty Co., 98-89 Queens Blvd., Forest Hills, N. Y., Owner Builds, $12,000,000. 1,000 HOUSES on 350 acre tract at Sunrise Hy. and Connetquot Rd., EAST ISLIP, N. Y.

Stafford at Freeport Homes, c/o Klein & Parker Realty Co., 1391 Northern Blvd., Rosyln, N. Y. Owner Builds. $460,000. 20 HOUSES on tract at South Shore and Carmen Sts., FREEPORT, N. Y.

True Value Homes, c/o Michael Alliegro Organization Inc., 133 Mineola Blvd., Mineola, N. Y., Owner Builds. $480,000. 200 HOUSES on tract on Spruce St. near Old Country Rd., GARDEN CITY, N. Y.

Rosanno & Iptolito, c/o Michael Alliegro Organization Inc., 133 Mineola Blvd., Mineola, N. Y. Owner Builds. $525,000. 25 HOUSES on tract at New Hyde Park Rd. between Clinch Ave. and Stratford Ave., GARDEN CITY, N. Y.

F-K Homes, c/o Michael Alliegro Organization, Inc., 133 Mineola Blvd., Mineola, N. Y., Owner Builds. $480,000. 20 HOUSES on tract on Jefferson St. and Stewart Ave., GARDEN CITY, N. Y.

Tomica Homes, c/o Michael Alliegro Organization, Inc., 133 Mineola Blvd., Mineola, N. Y. Owner Builds. $500,000. 15 HOUSES on Washington Ave. and Pine St., GARDEN CITY, N. Y.

Murray Manor Homes, c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner Builds. $450,000. 25 HOUSES on tract at Jerusalem and Dante Aves., south of Old Country Rd., HICKSVILLE, N. Y.

Sunnyside Estates, c/o Albert B. Meklenburg Organization, 1038 Northern Blvd., Rosyln, N. Y. Owner Builds. $450,000. 50 HOUSES on tract at Ackerly Lane and Farm-to-Market Rd., LAKE RONKONKOMO, N. Y.

Wellwood Homes, c/o Par-Sen Realty Corp., 70 W. Montauk Hy., Lindenhurst, N. Y. Owner Builds. $840,000. 60 HOUSES on tract at Wellwood Ave. south of Montauk Hy., LINDENHURST, N. Y.

▲ **Peter Marshall Homes,** c/o Edward S. Smith Realty Co., 159 E. Jericho Turnpike, Mineola, N. Y. Owner Builds. $2,000,000. 128 HOUSES on tract at Sunrise Hy. and Hemlock St., MASSAPEQUA PARK, N. Y.

▲ **Diesel Constr. Co.,** 625 Madison Ave., New York 22, N. Y. CA Est. $20,000,000. 26 story OFFICE, 123 William St., modernization of 55 John St. and 7 story addn. to 156 William St., NEW YORK, N. Y. Ivor B. Clark & Erwin S. Wolfson, c/o contractor. Emery Roth & Sons, 575 Madison Ave., New York 22, N. Y., archts.

Clement S. Crystal, Inc., 37-11 Main St., Flushing, N. Y. CA Est. $550,000. OFFICE alterations, 59-65 W. 39 St., NEW YORK, N. Y. R & K Corp., 1400 Broadway, New York, N. Y. CD 9/26.

▲ **Vanity Fair Homes,** c/o Henry A. Klar Realty Co., 220-02 Horace Harding Blvd., Bayside Hills, N. Y., Owner Builds. $4,200,000. 300 HOUSES on tract on Deer Park Ave. and South St., NORTH BABYLON, N. Y.

▲ **Oak Gardens Homes,** c/o George Foster, archt., 5 Liberty St., Hempstead, N. Y., Owner Builds. $2,000,000. 200 HOUSES on tract on Montauk Hy. west of Colony Drive, WEST SAYVILLE, N. Y.

† **The Glenwal Co., Inc.,** U. S. Hy. 46, Saddle River Twp., N. J., CA, $500,000. 600-man ARMY RESERVE TRAINING CENTER, at junction of Route 17 and Essex St., LODI, N. J. Army Reserve Unit Advisor, State Hy. No. 4, Paramus, N. J.

Pine Acres Homes, c/o Arthur Williamson & Co., 484 Route 17, Paramus, N. J. Owner Builds, $560,000. 33 HOUSES on tract, Ridgewood Ave. west of Route 17, PARAMUS, N. J.

Woodstock Estates, c/o Erwin Gerber & A. Pancani, Jr., archts., 1180 Raymond Blvd., Newark, N. J. Owenr Builds, $400,000. 20 HOUSES on tract on Valley Rd., PREAKNESS, N. J.

▲ **Westinghouse Electric Corp.,** P. O. Box 868, Pittsburgh 30, Pa. CA Est. $2,500,000. design and construct TURBINE GENERATOR, Unit 4, New Castle Plant, NEW CASTLE, PA. Pennsylvania Power Co., 19 E. Washington St., New Castle, Pa.

▲† **Standard Eng. Co.,** 2129 "J" St. N.W., Wash., D.C., CA, $1,659,000. changes and imprvs. U. S. Capitol POWER PLANT, WASH., D. C. Office of the Architect of Capitol, U.S. Capitol, Wash., D.C. Bids Oct. 7, awarded Oct. 14. CD 10/14, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

† **S. C., Myrtle Beach**—PARACHUTE-DINGHY BLDG.—BA 11/9—U. S. Eng., 31 Customhouse, Charleston, parachute and dinghy bldg., Myrtle Beach Air Force Base, ENG-38-081-56-18. CD 10/6.

† **S. C., Sumter**—HANGAR, etc.—BA 11/10—U. S. Eng., 31 Customhouse, Charleston, hangar shops, Shaw Air Force Base, ENG-38-081-56-19. CD 10/6.

† **S. C., Charleston**—WASHRACK—BA About 11/24—U. S. Eng., 31 Customhouse, Charleston, aircraft washrack, Charleston Air Force Base, ENG-38-081-56-27. CD 9/19/51.

BUILDINGS—BA

Fla., Miami—SCHOOLS, etc.—BA 11/2—Bd. P. Instruction Dade Co., School Administration Bldg., 275 N. W. Second St., Proj. 54-R-06-3, Richmond Heights Elementary School, Boggs Dr. between Harrison St. and Pinkston Dr., Richmond Heights, CD 11/6/52; Proj. 54-R-H10-1, Henry M. Flagler School, N. W. 1 St. between N.W. 51 Pl. and 53 Ave., Miami, Plans deposit $50, Dean Parmalee, Ingraham Bldg., Miami, archt.; Proj. 1B-174-F, Mays School classroom addn., Hainlin Mill Dr., Goulds, Edw. T. Rempe, 153 Sevilla Ave., Coral Gables, archt. Plans deposit $50.

HEAVY CONSTRUCTION—LB & CA

† **Virginia Engrg. Co. Inc.,** 80 29th St., Newport News, Va., LB $122,950, rocket storage and assembly bldg., ENG 44-110-56-3, LANGLEY AIR FORCE BASE, VA. U. S. Eng., Foot of Front St., Norfolk 1, Va. Bids Oct. 10. CD 9/28;
T. E. Ritter Corp., 426 W. York St., Norfolk, Va. LB $83,590, taxiway paving, ENG 44-110-56-3 (Langley Air Force Base, Va.).

† **U. S. Eng.,** 308 Customhouse, Wilmington, N. C., rejected bids Oct. 13, Air Force Facility, ENG-31-075-56-29, ELIZABETH CITY, N. C. CD 10/5.

† **Tidwell Constr. Co.,** Douglasville, Ga., CA, $590,322, Longstreet Bridge and Bell's Mill Bridge, Gainesville, Hall Co., Buford Reservoir area, ENG-01-076-56-8, GEORGIA, U. S. Eng., 2301 Grant St., Mobile, Ala. Bids Oct. 4. CD 10/13, under LB.

▲† **M. R. Thomason,** Bell Bldg., Montgomery, Ala., CA, $1,487,650. earth embankments, Hartwell Proj., Savannah River, Hartwell Dam site on Savannah River, Serial No. CIVENG-09-133-56-8, GEORGIA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Oct. 4. CD 9/12.

Stewart Iron Works Co., Inc., 17 and Madison Sts., Covington, Ky. LB $133,500. eqiup. sheep and swine

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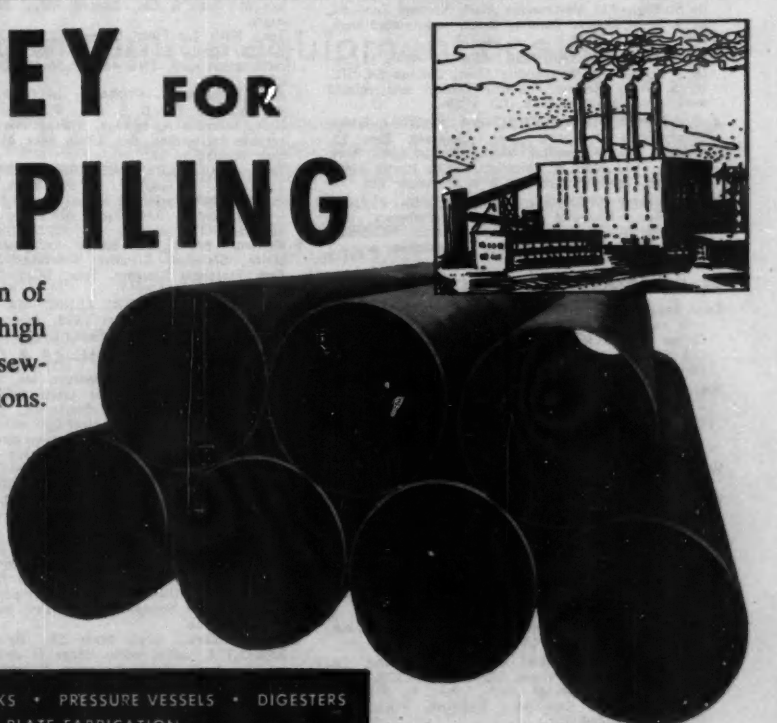

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pavilion, Area H; livestock pavilion Area J; New Kentucky State Fair & Exposition Center, LOUISVILLE, KY. State, Div. Purchases, Frankfort, Ky. Fred Elswick, & Assoc. Commerce Bldg., Louisville, Ky., archts. E. R. Ronald & Assoc., 554 S. Third St., Louisville, Ky., engrs. Bids Oct. 11. CD 4/15.

BUILDINGS—LB & CA

▲ **C. G. Shockley Constr. Co.,** 2020 Blanding St., Columbia, S. C. CA $1,250,000. 9 story HOSPITAL addn., COLUMBIA, S. C. Baptist Hospital, 1519 Marion St., Columbia, S. C. James B. Urqhart, Palmetto Bldg., Columbia, S. C., archt. CD 11/11/53.

Georgia Southern Contrg. Co., 3330 Vineville Ave., Macon, Ga., LB $641,300, Rockdale Elementary SCHOOL and Bryant Street School in Rockdale Co. CONYERS, GA. State School Bldg. Auth., 41 Exchange Pl., S. E., Atlanta, Ga. Bids Oct. 11. CD 9/14.

Watson & Yeargan, Jesup, Ga., LB, $660,539 Hines Shaw Center SCHOOL addn., Bradwell INSTITUTE, Riceboro Elementary SCHOOL and Liberty County ELEMENTARY and HIGH SCHOOL, HINESVILLE, GA. State School Bldg. Auth., Kemper Bldg., 41 Exchange Pl. S. E., Atlanta, Ga. Bids Oct. 12. CD 9/13.

W. B. Johns Constr. Co., Tifton, Ga., LB, $494,494 Pickens County High SCHOOL, Pickens County Training SCHOOL, Ludville Elementary SCHOOL and Talking Rock Elementary SCHOOL, JASPER, GA. State School Bldg. Auth. Kemper Bldg., 41 Exchange Pl. S. E., Atlanta, Ga. Bids Oct. 13. CD 9/14.

Marbury-Pattillo Constr. Co., 2119 6 Ave. N, Birmingham, Ala., CA, $440,000. Tuskegg Crest Negro HOMES, BIRMINGHAM, ALA. Borders & Co., 20 N. 21 St., Birmingham, Ala. Pembleton & Mims, Title Guarantee Bldg., Birmingham, Ala., archts. Awarded Oct. 1.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† **O., Sharonville**—TEST TRACK—BA On or About 11/1—U. S. Eng., 237 Fourth Ave., Huntington 19, W. Va., channelized test track and prestressed concrete slabs, General Services Depot, Eng. 46-022-56-8.

† **Illinois**—BA 11/4—U. S. Eng., 420 Locust St., St. Louis 2, Mo., clearing and excavation, Devil's Kitchen Dam, Crab Orchard Federal Wildlife Refuge Area, Williamson Co., approx. 11 mi. southeast of Carbondale, CIVENG 23-065-56-29. CD 4/27/44.

▲† **O., Dayton**—RESEARCH FACILITY—BA 12/7—U. S. Eng., P. O. Box 59, Louisville 1, Ky., research facility, Aeronautical Laboratory, Area B, Wright-Patterson Air Force Base, Eng. 15-029-56-2, $3,000,000-$3,500,000. CD 8/29.

BUILDINGS—BA

† **Ill., East St. Louis**—TRAINING CENTER—BA 11/1—U. S. Eng., 475 Merchandise Mart, Chicago Zone 54, U. S. Army Reserve Training Center and related work, ENG. 11-032-56-18.

† **Ind., Evansville**—TRAINING CENTER—BA 11/1—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., U. S. Army Reserve Training Center, and related work, ENG. 11-032-56-18. CD 9/29.

▲ **O., Warrensville**—HOSPITAL—BA 11/10—Cuyahoga County Hospital, Court House, Cleveland, Zone 13, 4 story county hospital addn., $1,500,000. Plans deposit $50. Horn & Rhinehart, 1240 Huron Bldg., Cleveland, Zone 15, archts. CD 9/22. under LB.

Ind., Eminence—HIGH SCHOOL ADDN.—BA 11/30—Bd. Educ., Eminence High School, Eminence, high school addn. Plans deposit $25. Everett H. Crabb, Assoc., 1607 E. Northwood Dr., Indianapolis, archts.-engrs.

HEAVY CONSTRUCTION—LB & CA

Great Lakes Dredge & Dock Co., Williamson Bldg., Cleveland 14, O. LB $335,035. est. $380,000. (3 bidders) Gordon Parl, small boat harbor and bulkhead, CLEVELAND, O. City, Dpt. Port Control, City Hall, Cleveland 14, O. Bids Sept. 29. CD 9/21.

National Constr. Co., 23500 Lakeland Blvd., Cleveland 23, O. LB $452,784, est. $475,000. 8 water mains at various locations, CLEVELAND, O. City, Div. Water & Heat Frank J. Schwemler comr., City Hall, Cleveland, O. Bids Sept. 30. CD 9/21.

WISCONSIN—State Hy. Comn., State Office Bldg., Madison,

Speedway Constr. Co., 6001 N. 91 St., Milwaukee, Wis., CA, $703,009. Contract 1, grading, base course 3.295 mi. U.S. Hy. 141, Proj. F 077-1 (2) and F 01-2 (2), Milwaukee Co. Bids Oct. 11. CD 10/14, under LB.

Deitz Electric Co., 264 East Ogden Ave., Milwaukee, Wis., LB, $285,120 (7 bidders) electrical distr. system, MILWAUKEE, WIS. Milwaukee County Institutions & Departments, 8731 Watertown Plank Rd., Milwaukee, Wis. Bids Oct. 13. CD 10/5.

Pittsburgh-Des Moines Steel Co., Neville Island, Pa. LB $399,850, four furnaces, DEARBORN, MICH. Dearborn-Melvindale Disposal Auth., Dale H. Fillmore, chn., Dpt. Law, City Hall, Dearborn, Mich. Bids Oct. 11. CD 9/29.

BUILDINGS—LB & CA

▲ **Turnau & Young,** 8200 Indian Hill Rd., Cincinnati, O. Owner Builds. $1,120,000. thirty-two 1½ story brick HOMES, Kenwood and Shawnee Run Rd., CINCINNATI, O. Robert B. Schildknecht, 31 E. Fourth St., Cincinnati, archt. Carl Rehring, 6988 Crystal Springs, Cincinnati, engr. Awarded Oct. 12.

Richard Keller, 12429 Cedar Rd., Cleveland Heights, O. CA approx. $400,000. 2 story brick OFFICE, 3537 Lee Rd., SHAKER HEIGHTS, O. Dr. LeRoy J. Hyman, 2010 E. 102 St., Cleveland 6, O. Richard Keller, 12429 Cedar Rd., Cleveland Heights, archt. Awarded Sept. 20.

▲ **Frank J. Volk Building Co.,** 207 N. Telegraph Rd., Dearborn, Mich. CA Est. $7,500,000. Fairlane Village Development, 700 face brick ranch HOUSES, Ecorse and Telegraph Rds., DEARBORN, MICH. Cudillo-Denwood, 1100 N. Telegraph Rd., Dearborn, Mich.

▲ **Flecker-LaBeau, Inc.,** 23520 Michigan Ave., Dearborn, Mich. Owner Builds. $2,200,000. 200 brick HOMES, Van Born and Telegraph Rd. section, DEARBORN, MICH.

▲ **Myron Shefman & Samuel S. Bankie,** 631 Penobscot Bldg., Detroit, Mich. Owner Builds. $9,000,000. Valley Park, 561 brick ranch HOMES Warren Ave. section, DEARBORN, MICH.

▲ **Practical Homes Builders, Inc.,** 13440 W. Seven Mile Rd., Detroit, Mich. Owner Builds. $2,000,000. 175 HOUSES, ECORSE, MICH.

▲ **Practical Home Builders, Inc.,** 13440 W. Seven Mile Rd., Detroit, Mich. Owner Builds. $2,500,000. Florane Gardens, 200 brick HOMES, INKSTER, MICH.

▲ **G. O. Lewis Co.,** 302 Capital Bldg., Battle Creek, Mich. LB Est. $1,250,000. 21,000 sq. ft. pump division PLANT addn., MARSHALL, MICH. Eaton Mfg. Co., 739 E. 14 St., Cleveland 10, O. Geo. S. Rider Co., Terminal Tower, Cleveland 13, O., engr. CD 7/12/51.

▲ **Cunningham-Limp Co.,** 3087 W. Grand Blvd., Detroit 2, Mich. CA Est. $2,000,000. 3 DYNAMOMETERS, TROY, MICH. Tractor & Implement Div. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. Dale Roeder, ch. engr. CD 8/13/54, under Mich., Dearborn.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

Minnesota—RURAL TELEPHONE LINES—BA 10/28—Paul Bunyan Rural Telephone Co-operative, Bemidji, 308.21 mi. telephone lines, Beltrami, Hubbard and Koochiching Counties, $150,000. Extended date, Communication Consultants, 1114½ Front St., Fargo, N. D., engrs. CD 10/14.

North Dakota—TELEPHONE LINES—BA 11/8— B E K Telephone Mutual Aid Corp., Steele, 1,274.14 mi. telephone lines, Burleigh, Kidder, Logan and Emmons Counties. $600,000. Communication Consultants, 1114½ Front St., Fargo, engrs.

† **New Mexico**—BA 11/15—Bureau Reclamation, Dpt. Interior, Albuquerque, earthwork and structures for Atrisco Siphon and appurtenant features, Middle Rio Grande Proj., near Albuquerque, Spec. DC-4541. adv. ENR 11/3. CD 9/7/44.

Okla., Davenport—BA 11/15—City, sanitary sewerage sys., sewage disposal plant. $75,000. Plans deposit $10. Lee M. Bush & Co., Colcord Bldg., Oklahoma City, engrs.

† **Tex., Kelly Air Force Base**—RECLAMATION YARD—BA 11/17—U. S. Eng., P. O. Box 1229, Galveston, reclamation yard, ENG 41-243-56-12. CD 10/5 under LB.

† **Ark., Jacksonville**—STORAGE, INCINERATOR, etc.—BA About 11/18—U. S. Eng., P. O. Box 867, Little Rock, Schedule A, storage, flyaway kits; Schedule B, garbage incinerator, dry, Little Rock Air Force Base. Eng. 03-050-56-26.

† **Tex., Pyote**—BLDGS. REHABILITATION—BA About 11/21—U. S. Eng., P. O. Box 1538, Albuquerque, N. M., rehabilitation of Bldgs. Nos. S-1310, S-1318, S-1319, and S-1336, Pyote Air Force Station, Eng. 29-005-56-27.

† **Montana**—BA 11/22—Bureau Reclamation, Dpt. Interior, Glendive, Glendive Substation addns., Fort Peck Proj near Glendive, Spec. DC-45-24; adv. ENR 11/3. CD 9/8/44.

† **N. M., Roswell**—DENTAL CLINIC—BA About 11/22—U. S. Eng., P. O. Box 1538, Albuquerque, dental clinic, Walker Air Force Base, Eng. 29-005-56-30.

HEAVY CONSTRUCTION—LB & CA

† **Joseph L. Pohl,** Box 13, Nevada, Mo. CA $747,081. Missouri River Agricultural Levee Unit 400-L, left bank of Missouri River in Platte Co., clearing, grubbing, levee embankment, drainage structures, placement of stone protection, surfacing levee crown, installation of freeboard gages, stop log closure structure, seeding. Contr. No. DA-23-028-CIVENG-56-95 (IFB CIVENG 23-028-56-27), MISSOURI. U. S. Eng., 1800 Federal Office Bldg., 911 Walnut St., Kansas City, Mo. CD 9/28, under LB.

▲ **Parsons Constr. Co.,** 2512 Deer Park Blvd., Omaha, Neb., LB $1,336,774, demolish existing bldgs., road work, drain piping, pumps, meters, control chemical feed lines, piping, outside basins, all for water concrete basins, OMAHA, NEB. Metropolitan Utilities Dist., 18 and Harney Sts., Omaha, Neb. Bids Oct. 10. CD 9/16.

▲† **Tecon Corp.,** 1201 Main St., Dallas, Tex. CA $3,673,154. outlet works Stage II and No. 13 hy. by pass Tuttle Creek Reservoir, Manhattan, incl. approach channel, intake tower and operating house, upstream and downstream transition conduit connecting to existing conduit stilling basin and Hy. No. 13 By-Pass DA 23-028-CIVENG 56-94, IFB CIVENG 23-028-56-21, KANSAS. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. CD 9/23, under LB.

Bennett Constr. Co., 114 Taylor St., Topeka, Kan. LB $271,430. city park pumping station, TOPEKA, KAN. City, City Hall, Topeka, Kan. Paden & Bartlett, New England Bldg., Topeka, Kan., engrs. Bids Oct. 4.

NEBRASKA—State Dpt. Roads & Irrigation, Lincoln, Neb.—**Capital Bridge Co.,** 1001 N. 9 St., Lincoln, Neb. LB $584,480, bridge, FA—F-138, Plattsmouth-Omaha, Cass and Sarpy Counties;

Neb.—Beatrice Constr. Co., Beatrice, Neb., LB $150,739, bridges and guard rail, FA—S-128, Martinsburg-Ponca, Dixon Co. Bids Sept. 29. CD 9/19.

† **U. S. Eng.,** Box 61, Tulsa 2, Okla., cancelled bids to have been opened Oct. 19, clearing reservoir, site for the Oologah Reservoir, Rogers Co. OKLAHOMA. CD 9/28.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Dahlgren & Brooks, Commerce Exchange, Oklahoma City, Okla., LB $259,632. est. $259,696. conc. pavement 2.477 mi. U. S. 64 at Leonard, Tulsa Co. Bids Oct. 4. CD 9/22.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Duard Pyle, 3409 Classen St., Oklahoma City 6, Okla. CA $680,303, est. $719,373, grade, drainage 3.375 mi. U.S. 77 bypass, Oklahoma City, Oklahoma Co. Bids Oct. 4, awarded Oct. 6. CD 9/22.

Lone Star Gas Co., 1915 Wood St., Dallas, Tex. Own Forces. $450,000, distr. gas lines, Dallas, Dallas Co. TEXAS. CD 2/9.

Lone Star Gas Co., 1915 Wood St., Dallas, Tex. Own Forces. $350,000, transmission gas lines, Fort Worth, Tarrant Co. TEXAS.

Chicago Bridge & Iron Co., 5625 Clinton Dr., Houston, Tex., LB $309,500, est. $95,500, 2 m.g. elevated steel water storage tank, EL PASO, TEX. City, P. Service Bd., El Paso, Tex. Bids Oct. 4.

City, Port Arthur, Tex., Own Forces. $125,000, storm sewers, PORT ARTHUR, TEX. George Schaumberg, 2678 Laurel St., Beaumont, Tex. engr. CD 4/22.

† **Hilde Constr. Co., Inc.,** 3810 7 Ave. N., Great Falls, Mont. CA $555,555. Milk River Unit of local flood protection Proj. at Havre, CIVENG 24-018-56-4, MONTANA. U. S. Eng., Fort Peck, Mont. CD 9/9, under LB.

BUILDINGS—LB & CA

Fowler-Veranth Constr. Co., 303 1st Ave. E., Duluth, Minn., LB $566,573, ELEMENTARY SCHOOL, BIWABIK, MINN. Bd. Educ., Sarah Anzelc, clk., Biwabik, Minn. Bids Oct. 12. CD 9/27.

▲ **Lovering Constr. Co.,** 59 W. Kellogg Blvd., St. Paul, Minn. and **J. S. Sweitzer & Son,** 739 Pillsbury St., St. Paul, Minn. LB $1,197,438. (joint bidders) (10 bidders) general contract, 1 story, 200,000 sq. ft. ELECTRONICS PLANT between W. Seventh St. and Davern St., Norfolk Ave. and Mississippi River, ST. PAUL, MINN. Engineering Research Associates of St. Paul, Div. of Remington Rand, W. C. Norris, vice pres., 543 St. Peter St., St. Paul, Minn. Bids Oct. 11. CD 9/22;
Healy Plumbing & Heating Co., 278 W. Kellogg Blvd., St. Paul, Minn. LB $412,800. (9 bidders) mechanical work. (St. Paul, Minn.).
Commonwealth Electric Co., 417 Broadway, St. Paul, Minn. LB $207,900. (5 bidders), electrical work (St. Paul, Minn.).

▲ **Kaiser Engineers,** 1925 Broadway, Oakland, Calif. CA Est. $6,500,000. design and construct, CEMENT MILL addn., incl. 1-kiln wet process unit, complete with cement storage and bulk loading facilities at dock on Mississippi River, CAPE GIRARDEAU, MO. Marquette Cement Mfg. Co., W. A. Wecker, pres., 20 N. Wacker Dr., Chicago, Ill. CD 8/25.

C. Rallo Contg. Co., 5000 Kemper Ave., St. Louis 9, Mo., CA $394,608, general constr., 1 and 2 story, U-shaped, 35x110 ft. brick, concrete FACULTY RESIDENCE with 25x75 ft. and 23x85 ft. wings and 2 story 38x250 ft. DORMITORY, CREVE COEUR (ST. LOUIS 24, P.O.) MO. Chaminade College, Society of Mary, Province of St. Louis, Rev. Louis J. Blume, pres., 425 S. Lindbergh Blvd., Creve Coeur 24, Mo. Neal J. Campbell, 911 Locust St., St. Louis 1, Mo., engr. Ferris & Hamig, 1706 Olive St., St. Louis 3, Mo., mech. engrs. Bids Oct. 7. CD 9/28.

William S. Cassilly, Inc., 534 S. Elm St., Webster Groves 19, Mo. Owner Builds. $700,000. 20 RESIDENCES, East Essex Ave.; 13 RESIDENCES, Cheshire Lane, ST. LOUIS COUNTY, MO.

Myers-Hughes, 600 Security Bldg., 319 N. 4 St., St. Louis 2, Mo. CA 50 semi-prefabricated, frame RESIDENCES, concrete fdns., etc. SELMA (CRYSTAL CITY, P.O.) MO. Mississippi River Fuel Corp., 407 N. 8 St., St. Louis 1, Mo.

▲ **Geo. Sheaf & Co.,** 20 W. 9 St., Kansas City, Mo. LB $1,997,650. POWER STATION STRUCTURES, Contr. No. 17, SPRINGFIELD, MO. City, City Hall, Springfield, Mo. Bids Oct. 6. CD 9/14.

▲† **A. J. Alport Constr. Co.,** Title Guaranty Bldg., 702 Chestnut St., St. Louis 1, Mo. CA $1,269,400. Item No. 1 STEAM PLANT No. 401, concrete, steel, asbestos siding 105x107 ft., Item 2 Process Incinerator No. 418, incl. connections to stack (Subcontract WS-11), WELDON SPRINGS, MO. Fruin-Colnon Contg. Co. & Utah Constr. Co., joint ventures, St. Louis Area Proj. Contr. AT (40-1) 1966, P.O. Box 522, St. Charles, Mo. CD 10/4, under LB.

Longhorn Investment Co., 9620 John West Rd., Dallas, Tex., On Forces. $346,750, (A) 30 DWELLINGS; $355,050 (B) 26 dwellings, ABILENE, TEX. CD 9/2.

J. H. McCullick Constr. Co., 1010 Brazos St., Austin, Tex., CA $375,000. STATE HEADQUARTERS BLDG., AUSTIN, TEX. Veterans of Foreign Wars, 801 Rio Grande St., Austin, Tex. Doyle M. Baldridge, c/o owner, archt.

B. L. McGee Constr. Co., Box 782, Austin, Tex., LB $614,000. est. $350,000. 250-students DORMITORY facilities, AUSTIN, TEX. Houston-Tillotson College, 1820 E. 8th St., Austin, Tex. Bids Oct. 7. CD 9/22.

(Continued on page B6)

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LUKENS STEEL COMPANY, COATESVILLE, PENNSYLVANIA

(Continued from page 84)

S. F. Frank Building Co., 1315 Cadiz St., Dallas, Tex. CA $359,185, 40 HOUSING units, DALLAS. Cast Terrace, Inc., 1315 Cadiz St., Dallas, Tex. CD 9/14.

▲ Crawford Building Corp., 520 N. Pearl St., Dallas, Tex. CA $1,645,000, main bldg. for SHOPPING CENTER, DENTON, TEX. Rae E. Skillern, 520 N. Pearl St., Dallas, Tex. CD 10/11.

Westmoreland Development Co., c/o David Bentliff, M. Esperson Bldg., Houston, Tex. Owner Builds. $405,625, (D) 39 DWELLINGS; $375,500, (E) 42 dwellings, HOUSTON, TEX. CD 1/13/55.

K. A. Sparks, 523 E. Pierson St., Hamilton, Tex., CA $557,000. est. $539,243, SCHOOL, KILLEEN, TEX. Killeen Independent School Dist., Killeen, Tex. Bids Sept. 29. CD 10/6 under LB.

Warner Constr. Co., Box 769, San Angelo, Tex., CA $856,754. Junior HIGH SCHOOL, MIDLAND, TEX. Midland Independent School Distr., Midland, Tex. Bids Sept. 30. CD 10/10 under LB.

▲ Robert H. Smith & Co., 1915 Kolfahl St., Houston, Tex., CA $1,235,201, tuberculosis HOSPITAL, TYLER, TEX. Bd. for Texas State Hospitals & Special Schools, 45 and Lamar Sts., Austin, Tex. Bids Oct. 6. CD 10/11.

FAR WEST

HEAVY CONSTRUCTION—BA

† Utah—POWER PLANT, SWITCHYARD—BA 11/15—Bureau Reclamation, Dpt. Interior, Spanish Fork, furnish labor and materials for Deer Creek Power Plant and Switchyard, Provo River Proj., near Provo. Spec. DC 4542. adv. ENR 10/27.

BUILDINGS—BA

Calif., Covina—HIGH SCHOOL—BA 11/8.—Covina Union High School Dist., Covina, Baldwin Park high school addn., Baldwin Park, $509,000. Frederick Kennedy, Jr., 1041 E. Green St., Pasadena, archt. CD 4/26.

▲ Calif., Norwalk—KITCHEN—BA 11/16—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, approx. 44,460 sq. ft. kitchen bldg., incl. 4,000 sq. ft. for bsmnt. a Metropolitan State Hospital. $1,000,000. Plans deposit $50. CD 1/14.

BUILDINGS—SLC

▲ Calif., Los Angeles—DORMITORIES, etc.—Occidental College, 1600 Campus Rd., soon lets contract dormitories, dining hall, art bldg. $1,450,000. Chambers & Hibbard, 124 W. 4 St., archts. CD 3/28.

Calif., Walnut — MUSIC-SPEECH — Mount San Antonio College Dist., Walnut, soon lets contract music and speech bldg., addn. to Mt. San Antonio College. $550,000. Frederick Kennedy, Jr., 1041 E. Green St., Pasadena, archt. CD 10/4, under LB.

HEAVY CONSTRUCTION—LB & CA

Statewide Plumbing & Heating Co., 4474 S. Main St., Murray, Utah, CA $535,499, pipe line for Sewer Proj. Sect. 3, North Davis, FARMINGTON, UTAH. North Davis County Sewer Dist., Ray J. Dawson, pres., Layton, Utah. Bids Sept. 17, awarded Oct. 5. CD 9/28 under LB.

† WASHINGTON—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland, Ore.

Henley Constr. Co., Yakima, Wash., CA $416,359 (16 bidders) grading 5.714 mi., 2 bridges Tieton River Rd., and South Fork Tieton River Rd., Yakima Co. Bids Oct. 11. CD 10/3.

▲ Pacific Telephone & Telegraph Co., Telephone Bldg., Seattle 1, Wash. Force Account. $1,200,000. high frequency radio sys. between Port Angeles and Seattle to handle Alaska calls, WASHINGTON.

▲ General Constr. Co., 3840 Iowa St., Seattle, Wash. CA $1,159,982. est. $950,000, concrete, variable-radius arch water supply dam approx. 130 ft. above stream bed of Union River, BREMERTON, WASH. City, City Hall, Bremerton, Wash. Bids Sept. 12. CD 9/15 under LB.

† J. G. Watts Constr. Co., 4538 S. W. Macadam Ave., Portland, Ore., LB $675,015 (5 bidders) 50 units of family housing, Geiger Air Force Base, Inv. 56-20, SPOKANE, WASH. Purch. & Contr. Officer, Geiger Air Force Base, Spokane, Wash. Bids Oct. 7.

▲† Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif. and Ostrander Constr. Co., Terminal Sales Bldg., Portland, Ore., CA $4,338,085, closure dam, The Dalles Dam, Wasco Co., CIVENG-35-026-56-1, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Sept. 20, awarded Oct. 13. CD 9/22, under LB.

▲ CALIFORNIA—State Div. Rys., 120 S. Spring St., Los Angeles,

Guy F. Atkinson Co., Box 253, Long Beach, Calif., LB $2,263,722, est. $3,000,000. (4 bidders) grading, paving, 6 bridges, 2 pedestrian undercrossings at 2.6 mi. between College Ave. and Campo Rd., San Diego Co. Bids Oct. 14. CD 9/30.

† Price-McNemar, Box 544, Sepulveda, Calif., LB $745,588. est. $750,000, tactical and administrative facilities, AAA Site. LA-40, Long Beach, Los Angeles Co., ENG 04-353-56-32, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Oct. 12. CD 9/29.

McGuire & Hester, 796 66th Ave., Oakland, Calif., LB $106,756. (3 bidders) Berkshire Village, Leeper Tract, sewers, paved sidewalks, curbs, gutters, drainage facilities, CONCORD, CALIF. City, City Hall, Concord, Calif. John S. Bates & Roy M. Trotter, 1784 Shattuck Ave., Berkeley, engrs.

Fred J. Early Jr. Co., 369 Pine St., San Francisco, Calif., LB $681,600, est. $681,600 (9 bidders) installing process auxiliary and deluge piping, 1st increment, NIMBUS, CALIF. Aero-Jet General Corp., c/o Chief Facilities Engr., 6352 N. Irwindale Ave., Azusa, Calif.

▲ Eaton & Smith Constr. Co., 1215 Michigan St., San Francisco, Calif., CA $4,178,888. (4 bidders) earth-fill, embankment, Nacimento River and Dam, 9 mi. southwest of Bradley on Nacimiento River, Monterey Co., SALINAS, CALIF. Monterey County Flood Control & Water Conservation Dist., Court House, Salinas, Calif. Bids Sept. 19, awarded Oct. 12. (Correction—cost). CD 10/17, under CA.

▲ M. H. Golden Constr. Co., 3485 Noell St., San Diego, Calif., CA $3,024,000. Cyclopean concrete quay wall, 10th Ave., Marine Terminal, SAN DIEGO, CALIF., City, Civic Center, San Diego, Calif. Bids Oct. 5. CD 10/10, under LB.

Standard Dredging Co., 108 W. 6th St., Los Angeles, Calif., CA $887,898, dredging bay in vicinity of 10th Ave. Marine Terminal, SAN DIEGO, CALIF. City, Civic Center, San Diego, Calif. Bids Oct. 5, awarded Oct. 11. D 10/12, under LB.

BUILDINGS—LB & CA

Weyerhaeuser Timber Co., Tacoma Bldg., Tacoma, Wash. Day Labor. $450,000. SAWMILL, RAYMOND, WASH. CD 10/10.

Constr. Engrs. & Contractors, 801 Port of Tacoma Rd., Tacoma, Wash., CA Est. $350,000, piling foundation for main bldg. of $2,250,000 expans. of ALUMINUM REDUCTION PLANT, TACOMA, WASH. Grand total $700,000. Kaiser Aluminum & Chemical Co., Kaiser Bldg., Oakland, Calif. CD 6/23;

Pacific Car & Foundry Co., Structural Steel Div., 120 W. Hudson St., Seattle, Wash., CA Est. $150,000, fabrication of 18 reduction cells, (Tacoma, Wash.);

Ederer Engrg. Co., 2931 1st Ave S., Seattle, Wash., CA Est. $100,000, special potroom crane (Tacoma, Wash.);

Bethlehem Pacific Coast Steel Co., 3631 E. Marginal Way, Seattle, Wash. CA Est. $100,000. fabrication and erection of structural steel for potline bldg. (Tacoma, Wash.)

Ross B. Hammond, 1241 N. Williams St., Portland, Ore., CA $619,179, CLASSROOM BLDG., Portland State College, PORTLAND, ORE. State Bd. Higher Educ., University of Oregon, Eugene, Ore. Bids Aug. 30, awarded Sept. 12. CD 9/8, under LB.

▲ W. C. Tait, 2300 Mason St., San Francisco, Calif., CA $1,250,000. 1 story 186,000 sq. ft. concrete Walls, FACTORY and OFFICE, BELMONT, CALIF. Dalmo Victor Co., 1414 El Camino Real, San Carlos, Calif. Simpson & Stratta, 140 Geary St., San Francisco, archts. CD 6/10.

J. N. Stephens, 10183 Whittier Blvd., La Habra, Calif., CA $522,900, 63 frame, stucco DWELLINGS, Edna Pl., Queenside Dr., COVINA, CALIF. Harbor Vista, Inc., 10183 Whittier Blvd., La Habra, Calif.

▲ Robt. S. Holmes, 9300 "G" St., Oakland, Calif., CA, $2,000,000. OFFICE and WAREHOUSE, EMERYVILLE, CALIF. Louis Stores, Inc., c/o Cecil S. Moyer, archt., 339 15 St., Oakland, Calif.

▲ B & E Building Co., 470 S. Beverly Dr., Beverly Hills, Calif., CA $1,972,524, 181 frame, stucco DWELLINGS, Tract 20415, GARDENA, CALIF. Condon Land Co., 258 S. Beverly Dr., Beverly Hills, Calif.

▲ Robert E. McKee, 4701 San Fernando Rd., Los Angeles, Calif., CA, $8,084,805. est. $8,515,000. OSTEOPATHIC UNIT, Los Angeles County General Hospital, LOS ANGELES, CALIF. Los Angeles Co. Hall of Records, Los Angeles, Calif. Bids Sept. 21, awarded Oct. 11. CD 9/23, under LB.

Valley Vista Homes, 478 San Vicente Blvd., Los Angeles, Calif. Owner Builds. $679,700, 76 frame, stucco DWELLINGS, Inyo and Bluebonnet Sts., etc. PUENTE, CALIF.

Irma Homes, U. S. Grant Hotel, San Diego, Calif., CA, $804,161. 83 frame stucco DWELLINGS, College Ranch Tract No. 1, SAN DIEGO, CALIF. Lake Murray Development Co., U. S. Grant Hotel, San Diego, Calif.

▲ George Rock, P. O. Box 783, Stockton, Calif., CA, $2,490,000. Lever Village JUNIOR HIGH SCHOOL and Eastside JUNIOR HIGH SCHOOL. STOCKTON, CALIF. Stockton City Unified School Dist., 304 N. San Joaquin St., Stockton, Calif. Bids Oct. 7, awarded Oct. 13. CD 10/12, under LB.

CANADA

HEAVY CONSTRUCTION—BA

Que., Quebec City—TERMINAL—BA 11/2—Dpt. Transport, Hunter Bldg., Ottawa, Ont., air terminal at Quebec Airport. $200,000. Plans deposit $25.

Ont., Toronto—BA 11/17—Municipality of Metropolitan Toronto, 67 Adelaide St. E., 3,753 ft. 10-in. inside diam. concrete sewer in North York. $150,000. Plans deposit $25. CD 7/21/54.

British Columbia—BA 12/5—Pacific Great Eastern Ry. Co., B. E. Valde, ch. engr. Squamish, substructure for Peace River Bridge at Mile 249 on the Pacific Great Eastern Railway north of Prince George. Plans deposit $75. CD 2/12/54 under Unclassified.

BUILDINGS—BA

Que., Drummondville—FEDERAL BLDG.—BA 11/9—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. federal bldg., Lindsay and St. Jean Sts. $500,000. Plans deposit $150. Morin & Cinq-Mars, 84 Notre Dame St. W., Montreal, archts. CD 12/14/54.

▲ Que., Montreal — HOTEL — BA 12/16 — Canadian National Railways, R. O. Stewart, ch engr., 360 McGill St., general constr. 20 story hotel. Total est. $20,000,000. Holabird, Root & Burgee, 180 N. Wabash St., Chicago, Ill., U. S. A., archts. CD 8/19/53.

HEAVY CONSTRUCTION—LB & CA

Terminal Constr. Co. Ltd., Dominion Square Bldg., Montreal, Que., CA. $624,552. 13 double staff dwellings, at airport, GOOSE BAY, LABRADOR. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Oct. 6. CD 10/14, under LB.

ONTARIO—Dpt. Hys., Parliament Bldgs., Tonorto,

McNamara Contr. Co. Ltd., 42 Industrial Ave., Toronto, Ont., CA $586,928, Humber River Bridge on new Lakeshore Expressway at Toronto, 400 ft. bridge. 4 spans, 3 concrete river piers, 2 concrete abutments, steel beam deck. Bids Oct. 5, awarded Oct. 11. CD 10/12, under LB.

Spino Constr. Ltd., 200 Sauve St. W., Montreal, Que. LB $380,335 (8 bidders) raising Sutherland PIER, Montreal Harbor, MONTREAL, QUE. National Harbors Bd., West Block, Parliament Bldg., Ottawa, Ont.

BUILDINGS—LB & CA

Catalytic Constr. of Canada, Ltd., 155 Wellington St., Sarnia, Ont., CA Est. $500,000. PLANT enlargement, Hy. No. 40, SARNIA, ONT. Cabot Carbon of Canada, Ltd., 350 Wilton Ave., Sarnia, Ont. Awarded Oct. 7.

Velan Engrg. Co., 6585 Jeanne Mance St., Montreal, Que. Day Labor, Separate Contracts. $350,000. 3 story bsmnt., approx. 16,000 sq. ft. PLANT and OFFICE, MONTREAL, QUE. Peter Vago, 3820 Cote St., Catherine Rd., Montreal, Que., archt.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

▲ Bids will be taken on the following project under International competitive bidding of NATO.

NETHERLANDS

De Directeur Debouwen, Werken en Terreinen, Baglinestra 40, The Hague,

supply approx. 55 kilometers 8-in. pipe; 7 kilometers 6-in. pipe and 4.5 kilometers 4-in. pipe; supplying valves; coating and laying of pipe line incl. ditching, welding, burying and closing ditch, fitting valves and making valve-boxes, cathodic protection, 2 road crossings, 1 railway-crossing, 2 small waterway crossings, 1 single and 1 double river crossing. Est. $1,034,880. Firms wanting to bid should report their interest before October 31. For information on bidding NATO projects see 6/25 Construction Daily.

Proposed Projects

WATER SUPPLY

▲ Neb., Lincoln—City, City Hall, water supply expans. incl. increasing filtering capacity. $1,418,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 5/12/53.

▲ O., Ashland—City, 8 m.g. water treatment plant, $2,000,000, Alfred LeFeber & Assoc., 2933 Woodburn St., Cincinnati, consult. engrs. Constr. Summer 1956. CD 7/8/54.

▲ Va., Fairfax—Fairfax Co. Bd. Suprvs., Court House, bond election November 8, integrated water sys. $30,000,000.

▲ Ont., Cooksville—Toronto Twp., Municipal Offices, Cooksville, water system expansion incl. 3,000,000 gal. underground reservoir, addnl. water mains, addnl. pumps at Mississauga pump station, 16- to 24-in. diam feeder mains to extend from Lakeview purification plant to west end of township, Clarkson, $1,000,000. Gore & Storrie, Ltd., 1130 Bay St., Toronto, consult. engrs.

SEWERS, WASTE DISPOSAL

Calif., Livermore—City, City Hall, sewage treatment plant. $750,000.

▲ Calif., Los Angeles—City, City Hall,

Branford Ave. interceptor sewer, $204,000.

Centinella Ave. and First Alley, north of Pico Blvd. Sewer Dist. $99,000.

Crescent Heights Blvd. and Orange Dr. relief sewer dist. $74,250.

First St. and Grand Ave. sewer dist. $122,670.

Floyd Dr. and Mulholland Dr. sewer dist. $252,000.

Foothill Blvd. and McVine Ave. sewer dist. $470,670.

Harper Ave. and Beverly Blvd. sewer dist. $81,000.

Hayvenhurst Ave. interceptor sewer, $873,000.

Hollywood Blvd. and Laurel Canyon Blvd. relief sewer, $82,800.

Los Angeles International Airport sewer sys. $257,500.

Main St. sewer replacement, $361,890.

Mason Ave. sanitary sewer, Parthenia St. to Saticoy St. $94,500.

Normandie Ave. sanitary sewer, Jefferson Blvd. to Exposition Blvd. $100,000.

Pacific Coast Hy. sanitary sewer from Malibu pump plant to Sunset Blvd. $414,000.

Pierce St. sanitary sewer, Foothill Blvd. to Pala Ave. $115,200.

Roscoe Blvd. and Balboa Blvd. sewer dist. $404,340.

San Pedro St., Relief Sewer Dist. No. 9, from Washington Blvd. to 32 St. $90,000.

Tampa Ave. sanitary sewer, Roscoe Blvd. to Keswick St. $100,800.

Topauga Canyon Blvd. sanitary sewer Saticoy St. to Van Owen St. $157,500.

Valley outfall relief sewer, portion of Sunland-Tujunga Sect. C. $563,750.

(Continued on page 89)

NEW SUPER RAYNILE CONVEYOR BELT 400% STRONGER

Provides the economical answer to transporting crushed stone and other bulk materials over long distances and up steep slopes.

This remarkable new Hewitt-Robins conveyor belt reinforced with the revolutionary synthetic fabric, Super Raynile, makes possible an entirely new concept in single-section conveyor application. It solves difficult materials handling problems where topography and other conditions require the use of a long single-length conveyor.

Already in service, Super Raynile has the highest operating tension of any conventional carcass belt. Because of its tremendous tensile strength, 400% greater than conventional cotton reinforced belts, a single conveyor section *5¾ miles long* can be built over level terrain to carry material at 400 TPH using only a 6-ply Super Raynile belt 30 inches wide. This same belt can also lift material from ground level to a height of 830 feet.

The new Hewitt-Robins Super Raynile conveyor belt is highly flexible and pliable despite its great strength. Its cost is less than steel-reinforced belts and Super Raynile can easily be spliced in the field more quickly, more economically and without the specialized equipment required to splice steel-reinforced belts.

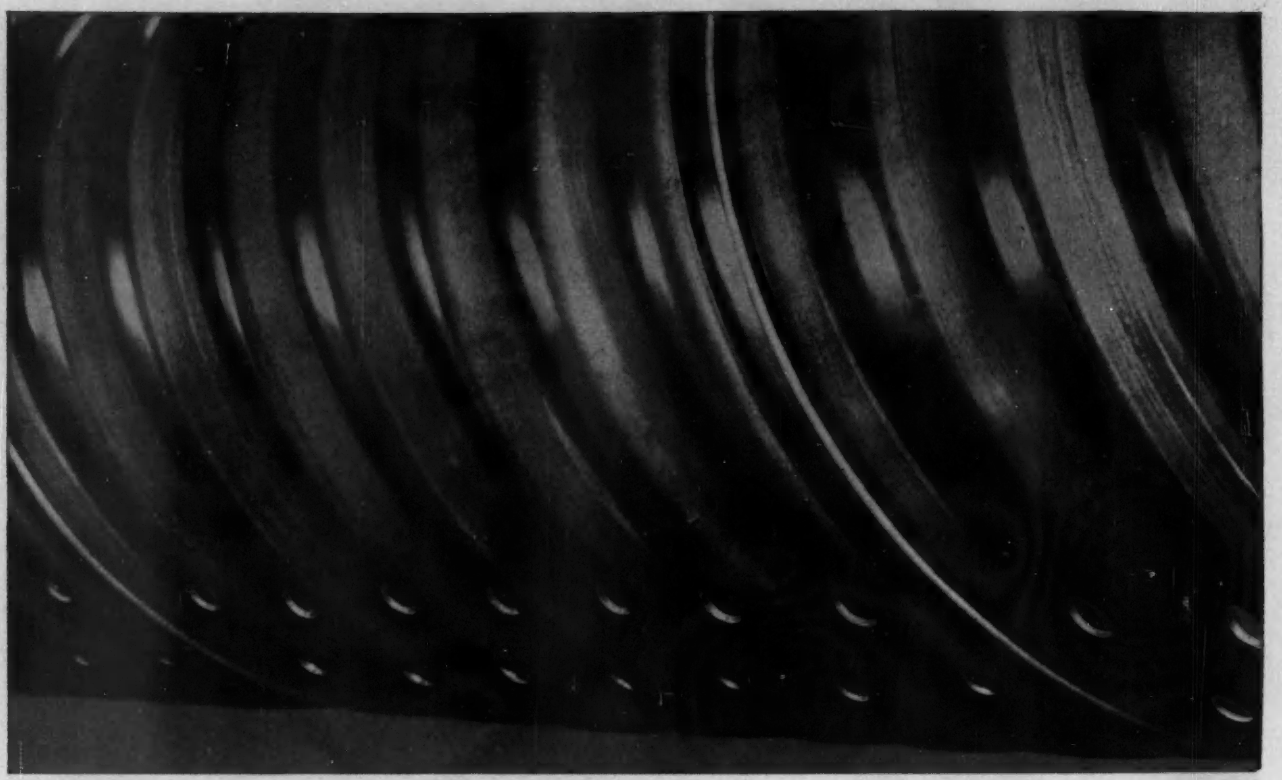
Super Raynile belt is available in a wide range of specifications . . . widths up to 72" — thickness up to 15 plies.

Learn more about this new long-length, long-life conveyor belt. Contact your local Hewitt-Robins Industrial Supply Distributor (see Classified Phone Book), or write direct to "Super Raynile Belt", Hewitt-Robins Incorporated, Stamford, Connecticut.

Hewitt-Robins

Conveyor Belting—Industrial Hose—Conveyor Machinery—Vibrating Screens—Vibrating Conveyors—Design, Manufacture, Engineering and Erection of Complete Bulk Materials Handling Systems.

HEWITT-ROBINS INCORPORATED • STAMFORD, CONNECTICUT



These pipe holes stop "chuck holes"

More than 80% of highway surface failures are caused by too much water in highway foundations. The resulting broken pavements and "chuck holes" are dangerous to motorists and create a continuing maintenance problem.

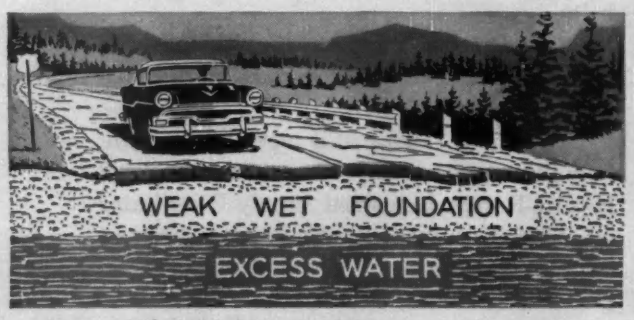
Armco HEL-COR Perforated Pipe has been especially designed to drain harmful ground water. Scientifically placed holes of the right size are drilled on each side of the pipe invert. Water seeps in and is drained away. Highway foundation stays firm and dry.

EFFICIENT, DURABLE. With Armco Perforated Pipe there is no danger of disjointing, even in unstable soils. Individual lengths are firmly connected with a bolted coupling band. There is little or no danger of clogging.

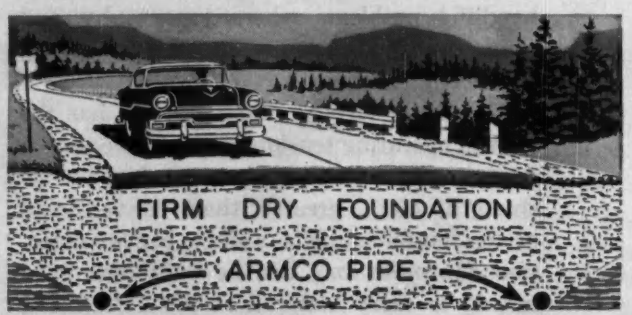
EASY, FAST INSTALLATION. Installation of Armco Perforated Pipe requires a minimum of men and equipment. Here are a few reasons why:

Transportation is no problem. One truck can carry almost a mile of 6-inch diameter Armco Perforated Pipe. Two workers easily lay, line and join the pipe—20-foot sections of 6-inch pipe weigh only 76 pounds. Joining two twenty-foot sections takes only a couple of minutes. Backfilling with the proper filler material completes the job.

Write us for more data. Armco Drainage & Metal Products, Inc., 4535 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



More than 80% of all highway surface failures are caused by too much water in highway foundations. Lack of proper support ruins costly pavements to create driving hazards and an expense to taxpayers.



Placed at the right depth, Armco HEL-COR Pipe removes excess water. Highway surfaces remain smooth for safer, more enjoyable driving. Maintenance costs go down and expensive highway pavements last longer.

Manufacturers of: MULTI-PLATE Pipe, Arch and Pipe-Arch • Corrugated Metal Pipe • Welded Steel Pipe • FLEX-BEAM Guardrail • Water Control Gates • Retaining Walls • Steel Buildings • Sheeting • Bridge Plank • Tunnel Liner • Subdrainage Pipe • End Sections • Pipe Piling and Pile Shells

ARMCO PERFORATED PIPE

(Continued from page 86)

Valley outfall relief sewer, remainder of Sect. E. $315,000.

Van Owen St. and Havenhurst St. sewer dist., sanitary sewer. $100,400.

Venice Interceptor, relief sewer, Unit A, $327,000.

Relief Sewer District No. 9, Unit A $141,300.

Relief Sewer Dist. No. 9, Unit B, $180,000. L. A. Pardee, city engr. CD 4/8.

Colo., Grand Junction—City, City Hall, sewer sys. imprvs., incl. new lines, const. sewage plant. $744,791. Herkenhoff-Turney, 302 E. Palace Ave., Santa Fe, N. M., consult. engrs.

▲ **O., Toledo**—Lucas Co., Comrs. Court House, interceptor sewer on Laskey Rd., $2,000,000, Raymond E. Hall, Jackman Rd., co. san. engr. Bids in Dec. CD 7/18/50.

▲ **Tex., Lubbock**—City, M. R. Tripp, mgr., City Hall, sanitary sewer mains, $1,460,000; rehabilitation and imprvs. existing sanitary sewer sys. $400,000; storm sewers, $1,500,000; CD 12/29/52.

Tex., Port Acres—Jefferson County Water Control & Imprv. Dist. 5, c/o Albert Breaux, 4th St., sewer imprvs. $950,000. Joe J. Rady, 511 Insurance Bldg., Fort Worth, consult. engr.

Utah, Lehi—Lehi City Corp., Lehi, voted bonds September 20, sewerage sys. $751,000. Caldwell, Richards & Sorensen, 408 Zion Saving Bank Bldg., Salt Lake City, consult. engrs. CD 9/7.

▲ **Utah, Orem**—Orem City Corp., L. A. Beckman, city engr. Orem, $1,500,000 bond election November 8, sewage disposal plant, $1,500,000. Caldwell, Richards & Sorensen, 408 Zion Saving Bank Bldg., Salt Lake City, consult. engrs. CD 9/7.

▲ **Ont., Cooksville**—Toronto Twp., Municipal Offices, Cooksville, sewage disposal plant near site of housing development, Clarkson, $1,000,000. Gore & Storrie Ltd., 1130 Bay St., Toronto, consult. engrs.

BRIDGES

▲ **Texas-Louisiana**—Jefferson Co. Comrs. Court, Court House, Beaumont, Tex. and Cameron Parish, La., Sabine Causeway Proj., toll causeway to run from Pleasure Island at Port Arthur to Cameron Parish, overall structure 3,600 ft. long with concrete part 2,200 ft. long, $1,000,000.

STREETS AND ROADS

▲ **ARKANSAS**—State Hy. Dpt., State Capitol, Little Rock,

Boone Co.—grading, surf. 10 mi. Hy. 14, Omaha east. $300,000.

Carroll Co.—grading, surf. 17 mi. Hy. 68, Dryfork-Alpena, $415,000.

Chicot Co.—U. S. Hy. 65 and U. S. Hy. 82 widening to Mississippi River Bridge at Greenville, Miss. $345,000.

Cross Co.—grading, surf. 11 mi. Hy. 42, Hickory Ridge-Cherry Valley. $200,000.

Hempstead Co.—grading, surf. 11 mi. Hy. 55, Saratoga-Fulton, $375,000.

Hot Spring Co.—surf. 13 mi. Hy. 84, Bismark-Social Hill $345,000.

Lincoln Co.—grading, surf. 9 mi. Hy. 11, Fresno-Grady, $225,000.

Searcy and Stone Counties—grading, drainage 19 mi. Hy. 66, Leslie-Mountain View. $380,000.

Washington Co.—widening 8 mi. U. S. Hy. 71, Rogers-Bentonville, $340,000.

Woodruff Co.—grading, surf. 19 mi. Hy. 39. $570,000.

Okla., Tulsa—City, City Hall, grade, pave streets in Morningside Heights. $800,000. W. R. Wooten, city engr. CD 3/5/52.

▲ **Tex., Lubbock**—City, M. R. Tripp, mgr., City Hall, street paving and imprvs. $1,500,000. CD 3/1.

▲ **Va., Arlington**—Arlington Co., Court House, bond election November 8, highways, drainage and sewage work. $3,530,000.

EARTHWORK, WATERWAYS

▲† **California**—U. S. Eng., 1209 8th St., Sacramento, Bear River clearing from mouth upstream, Yuba Co. $270,000.

Butte Bypass and upper Sacramento River clearing, Butte Co. $130,000.

Cache Creek, Yolo Bypass to High ground, levee constr., Yolo Co. $180,000.

Cherokee Canal, levee work, Butte Co. $640,000.

Chico Creek, Mud Creek and Sandy Gulch, levee work, Butte Co. $430,000.

Little Chico and Butte Creek, levee constr., upstream from Old Hy. 99E, Butte Co. $694,000.

Sacramento River, east levee constr., Tisdale Weir to Sutter Bypass, Sutter Co. $400,000.

Sacramento River levee constr., west, Princeton to Ord Bend, Glenn Co. $75,000.

Sutter Bypass clearing from Fremont Weir upstream, Yolo and Sutter Counties. $210,000.

levee constr. normal bank protection, Sacramento Co. etc. $180,000.

constr., west levee of Sacramento River in vicinity of Monument Bend, Yolo Co. $190,000.

constr., back level of Reclamation Districts Nos. 1000 and 1001, Sacramento and Yuba Counties. $300,000. all Sacramento River Basin. CD 7/6.

† **Missouri and Arkansas**—U. S. Eng., P. O. Box 867, Little Rock, Ark., main generator cables, Table Rock Dam, Branson, Mo., $100,000-$500,000. Bids about 12/15. CD 7/16/54.

▲ **Tex., San Antonio**—San Antonio River Auth., c/o Frank Drought, 342 W. Woodlawn St., bond election January 10, widen. and straighten portion of San Antonio River Channel. $10,000,000. CD 10/5.

AIRPORTS

▲† **Ariz., Yuma**—HANGAR—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., hangar, Yuma County Airport. $1,000,000. Yost & Gardiner, Heard Bldg., Phoenix, consult. engrs. CD 8/4.

† **Ark., Blytheville**—AIR BASE—U. S. Eng., P. O. Box 867, Little Rock, hazard removal, est. less than $100,000. Bids About November 28; parking areas, est. $100,000-$500,000. Bids About December 7; foregoing at Blytheville Air Force Base. CD 12/1/53.

▲† **Calif., El Toro**—AIR STATION—Dpt. Navy, San Diego, airfield pavements, training storage, communication facilities, Marine Corp Air Station, $2,492,000. Appropriated. CD 10/22/54.

▲† **Calif., Miramar**—AIR STATION—Dpt. Navy, San Diego, storage, training, personnel, fuel dispensing facilities, Miramar Naval Air Station, $4,370,000 appropriated. CD 10/22/54.

▲† **Calif., San Diego**—FACILITIES—Dpt. Navy, San Diego, training, operational, aircraft maintenance, fuel dispensing facilities, Naval Air Station. $2,748,000. Appropriated. CD 10/22/54.

▲† **Mass., Falmouth**—HOUSING—Purch. & Contg. Officer, Otis Air Force Base, Falmouth, plans by The Architects Collaborative, 96 Mt. Auburn St., Cambridge, 501 family housing units, Otis Air Force Base, $5,500,000. Utilities Engineers, Inc., 359 Boylston St., Boston, and Fred S. Dubin & Assoc., 178 S. Whitney St., W. Hartford, Conn., consult. engrs. CD 9/2.

▲ **N. H., Portsmouth**—HOUSING—Purch. & Contrg. Officer, Portsmouth Air Force Base, Portsmouth, plans by Koehler & Isaak, 922 Elm St., Manchester, family housing, 1, 2 and 4 family units (1,005 unit), Portsmouth Air Force Base. $10,000,000. Joseph L. Paley, 230 Clarendon St., Boston, Mass., consult. engr. CD 9/13/51.

▲† **N. C. Edenton**—JET BASE—P. Wks. Office, Fifth Naval Dist., Norfolk 11, Va., advance planning of Mater Jet Base at Naval Auxiliary Air Station. est. $3,000,000. No appropriation, J. N. Pease & Co. Inc., 119½ E. 5th St., Charlotte, archt.-engr.

▲† **N. C., Hertford**—AIR FACILITY—P. Wks. Office, Fifth Naval Dist., Norfolk 11, Va., feasibility study for development of Naval Air facility at Harvey Point. est. $3,000,000. No. appropriation. Lashmit, James, Brown & Pollock, Reynolds Bldg., Winston-Salem, N. C. and Thomas B. Bourne Assocs. Incl., Dupont Circle, Wash., D. C., engrs.-archts.

▲† **Va., Oceana**—AIR STATION—Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, storage, personnel, maintenance, community and fuel dispensing facilities, Naval Air Station, $5,281,000.

▲† **Wash., Moses Lake**—HANGAR—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, plans by Naramore, Bain, Brady & Johanson, 904 8th Ave., Seattle, hangar, Larson Air Force Base. $7,000,000. Bids in December. CD 6/15.

▲ **Alta., Edmonton**—INTERNATIONAL AIRPORT—Dpt. of Transport, Hunter Bldg., Ottawa, Ont., new international airport about 10 mi. south of here. $2,000,000.

PUBLIC BUILDINGS

▲ **Calif., Corona**—SCHOOLS—Corona Unified School Dist. of Riverside Co., Corona, defeated $1,775,000 bonds Sept. 27, schools. CD 7/27.

Calif., Costa Mesa—SCHOOL—Costa Mesa School District, Costa Mesa, plans by Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, 1 story, 25,400 sq. ft., frame, stucco Primary School No. 2, $500,000.

▲ **Calif., Garden Grove**—SCHOOLS—Garden Grove School District, Garden Grove, plans by Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, 1 story, 45,000 sq. ft., reinforced brick Proj. 1, Intermediate School $750,000; 1 story 26,400 sq. ft., frame Hazard St. School $400,000; Proj. 15, 26,400 sq. ft. Bargston School $500,000.

▲ **Calif., Puente**—SCHOOLS—Hudson School District, 15839 E. Rowland St., plans by Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, 1 story, 31,500 sq. ft., masonry Orange Ave. School, $500,000; 1 story 30,000 sq. ft., masonry Newton St. School $500,000; 1 story, 41,000 sq. ft. reinforced brick Unruh School $750,000. CD 3/8.

▲ **Calif., Salinas**—SCHOOLS—Salinas City Elementary School Dist., 431 W. Alisal St., voted $1,500,000 bonds, addnl. classrooms and new elementary school. CD 11/25/53.

▲ **Calif., San Jose**—CITY HALL—City, City Hall, voted $1,975,000 bonds, city hall. CD 7/20.

▲ **Colo., Aurora**—HIGH SCHOOL, etc.—School Dist. No. 28-J, 1255 Kenton St., bond election October 28, new junior high school, new elementary school and existing grade school addn. $1,110,000. Atchison & Kloverstrom, 257 Josephine St., Denver, archts.-consult. engrs.

▲ **Conn., Bridgeport**—CITY HALL, CIVIC CENTER—City, City Planning Comn., City Hall, plans by Harry G. Lindsay, 211 State St., Bridgeport, city hall and civic center, Arthur J. Wheeler Estates, Golden Hill, Congress and Harrison Sts., parking terminal and civic center covering all long on southwest side Washington Ave. from Arch to Courtland Sts. $2,000,000. CD 7/21/54.

▲ **Conn., East Haven**—HIGH SCHOOL—Town, School Dpt., Town Hall, plans by Shilling & Goldbecker, 18 Trumbull St., New Haven, Junior High School, North High St.-Rte. 100. $1,500,000.

▲† **Ga., Atlanta**—COMMUNICABLE DISEASE CENTER—General Services Admin., General Services Bldg., Wash. 25, D. C., plans by Robert & Co. Assocs., a[illegible]-engrs., 96 Poplar St. N.W., communicable disease center to incl. 6-story laboratory and office bldg.; auditorium and cafeteria, audio-visual bldg., infectious disease bldg., virus bldg. and boiler house, 15-acre site. $12,330,000. CD 7/12.

▲ **Idaho, Boise**—SCHOOL—Boise School Dist., defeated $2,100,000 bonds Oct. 4, high school. Wayland & Woodmansee, Jones & Dropping & Hummel, Hummel & Jones, Idaho Bldg., Boise, archts. CD 9/22.

Ind., Highland—HIGH SCHOOL—School Dist. of Highland, plans by Perkins & Will, 309 W. Jackson Blvd., Chicago 6, Ill., high school. $800,000. Bachman & Bertram, 5116 Hohman St., Hammond, Ind. assoc. archts. CD 7/8.

Ind., New Market—HIGH SCHOOL—New Market School Corp., New Market, high school. $500,000.

Iowa, Marshalltown—HIGH SCHOOL—Bd. Educ., Marshalltown, plans by Brooks-Borg, 815 Hubbell Bldg., Des Moines, junior high school. $600,000.

Kan., Concordia—SCHOOL—Bd. Educ., Carl A. James, Supt. Schools, voted $570,000 bonds Sept. 20, school. Carl A. Ossmann & Assoc., 418 Central Bldg., Topeka, archts. CD 9/15.

Ky., Covington—SCHOOL—Bd. Educ., 25 E. Seventh St., $950,000 bond election Nov. 8, elementary school near Madison Ave. and Rosina St. Potter, Tyler, Martin & Roth, 128 E. 6 St., Cincinnati, O., archts. CD 2/17/54.

▲ **Md., College Park**—LIBRARY—State, University of Maryland, College Park, plans by Hopkins & Burton, 10 E. Mulberry St., Baltimore, Zone 2, brick, stone, steel, rein.-con. library, $2,200,000. CD 12/8/52.

▲† **Mass., Ayer**—HOUSING—U. S. Eng., 857 Commonwealth Ave., Boston, plans by M. A. Dyer Co., 27 School St., Boston, 400 family housing units, Fort Devens, $4,500,000.

Mass., Marshfield—SCHOOL—Town, Supt. Schools and Ellis Rand, chn. bldg. comn., New St., high school, $600,000.

Mich., Ann Arbor—LIBRARY—City, Bd. Educ., Donald C. Douglas, secy., public library, $725,000.

▲† **Mich., Detroit**—ARMORY—U. S. Eng., Cadillac Tower, national guard armory, 7.5 acre site Eight Mile Rd. and Sunset St., Farwell Field, $1,770,000. CD 11/22/54.

▲ **Mich., Kalamazoo**—LIBRARY-MUSEUM—City, Bd. Educ., voted $1,200,000 bonds Oct. 3, 2 story library-museum. Louis C. Kingscott & Assoc., 511 Monroe St., Kalamazoo, archts. CD 9/7.

Minn., Lakeville—SCHOOL—Bd. Educ., F. Merritt, clk., voted $700,000 bonds Sept. 29, high school, other facilities, $600,000. Swanson, Matson & Wegleitner, 500 Sexton Bldg., Minneapolis, archts. CD 7/27/53.

▲ **Minn., St. Paul**—RESIDENCE HALLS—University of Minn., Admin. Bldg., Main Campus, Minneapolis, plans by Magney, Tusler & Setter, 303 Roanoke Bldg., Minneapolis, three residence halls, $2,200,000. CD 10/11.

Neb., Falls City—SCHOOLS—Bd. Educ., Falls City, $525,000 bond election November 15, two schools. $660,000.

▲ **Neb., Kearney**—SCHOOLS—Bd. Educ., Kearney, $2,200,000 bond election November 8, new high school, new elementary school, conversion of one elementary school to junior high school. $2,200,000.

▲ **Neb., Omaha**—SCHOOLS—Bd. Educ., 3902 Davenport St., $20,000,000 bond election November 22, new schools and present schools addns.

▲ **N. M., Portales**—DORMITORY—Eastern New Mexico, University, c/o State Bd., Educ., Santa Fe, women's dormitory, $425,000; men's dormitory, $375,000; music bldg., $500,000.

▲ **N. Y., New Hyde Park**—SCHOOLS—Bd. Educ., Union Free School Dist., 9, Town North Hempstead,, Long Island, plans by Warren H. Ashley, 967 Farmington Ave., West Hartford, Conn., senior high school, $1,360,000; Herrick School addn. to convert to Junior High School, $740,900. David R. Maiman, 217-39 53 Ave., Bayside, struct. engr. CD 4/15.

▲ **N. Y., New York**—GARAGE—City, Dpt. P. Wks., Municipal Bldg., Zone 7, 4 story parking garage on east side of 8 Ave. from W. 53 to W. 54 Sts. for Traffic Commission, $1,500,000. CD 11/21/46.

O., Alliance—SCHOOL—Bd. Educ., Granville S. Hammond, supt., Garwood-Morgan Elementary School, $600,000. CD 11/10/54.

O., Champion—SCHOOL—Champion Twp. Local School Dist., $660,000 bond election Nov. 8, school addns.

O., Howland—SCHOOL—Howland Twp. Local School Dist., Howland Corners, $545,000 bond election Nov. 8, school addns.

O., Mayfield—SCHOOL—City, Bd. Educ., S.O.M. Center Rd., $990,000 bond election Nov. 8, schools, imprvs.

▲ **O., West Carrollton**—SCHOOL—Bd. Educ., $1,100,000 bond election Nov. 8, school expansion. CD 5/19/52.

Okla., Edmond—DORMITORY—Bd. Regents, Capitol, Oklahoma City, Zone 5, plans by Hudgins, Thompson & Ball, 1411 Classen St., Oklahoma City, men's dormitory, Central State College. $500,000.

Okla., Tahlequah—SCIENCE—Bd. Regents, Capitol, Oklahoma City, Zone 5, plans by Hudgins, Thompson & Ball, 1411 Classen St., Oklahoma City, science bldg. at N. E. State Teachers College. $550,000.

Pa., Horsham—SCHOOL—Hatboro-Horsham Joint School Bd., Horsham, junior high school, $750,000.

▲ **Tex., Amarillo**—SCHOOLS—Amarillo Independent School Dist., Amarillo, voted bonds September 24, senior high school, $1,450,000; junior high school, $1,225,000; elementary school No. 1, $375,000;

elementary school No. 2, $400,000; elementary school No. 3, $410,000; elementary school No. 4, $425,000; elementary school No. 5, $535,000; elementary school No. 6, $450,000; group addns. to elementary school, $375,000; addns. to existing junior high school, $375,000; gymnasium, $375,000. CD 9/30.

▲ **Tex., Lubbock**—GENERATING UNIT—City, M. R. Tripp, mgr., City Hall, electric generating unit. $3,250,000. CD 10/6/50.

▲ **Tex., Lubbock** — SCHOOLS — Lubbock Independent School Dist., A. W. Eckert, Bus. Mgr., 1715 26th St., bond election October 15, Junior High School No. 2, $1,250,000; Elementary School No. 1, $375,000; Elementary School No. 2, $400,000; Elementary School No. 3, $350,000; Elementary School No. 4, $390,000; Elementary School No. 5, $425,000; Elementary School No. 6, $600,000; Elementary School No. 7, $550,000; Elementary School No. 8, $450,000; Elementary School No. 9, $475,000; Elementary School No. 10, $500,000; gymnasium, $375,000; auditorium, $350,000; cafeterias-offices, $750,000; group of 376 classrooms, $1,310 000; plans by Butler-Kimmel Co., 412 Avenue M, Junior High School No. 1, $1,000,000. CD 4/20.

▲ **Va., Fairfax**—HOSPITAL—Fairfax Co. Bd. Suprvs., Court House, bond election November 8, 300-bed general hospital. $3,000,000.

Wis., Racine—LIBRARY—Library Bd., 701 Main St., library. $900,000.

Wyo., Rock Springs—COURT HOUSE—Sweetwater Co., courthouse, $800,000.

▲† **Alaska, Adak**—HOUSING—17th Naval Dist., Kodiak. plans by Alaska Affiliates, c/o Naramore, Bain, Brady & Johanson, 904 7th Ave., Seattle, Wash., housing at naval station. $2,485,000. Bids in spring. CD 4/27.

† **Alaska, Kodiak**—HOUSING—P. Wks. Officer, 17th Naval Dist., Kodiak, plans by Alaska Affiliates, c/o Naramore, Bain, Brady & Johanson, 904 7th Ave., Seattle, Wash., housing for families of servicemen at Naval Air Station, $719,000. Bids in Spring. CD 5/19/54.

▲ **Ont., Toronto**—OFFICE—Toronto Transit Commission, 35 Yonge St., Toronto, 4 to 6 story, office over subway station and track at Davisville Ave. and Yonge St., $1,000 000.

COMMERCIAL BUILDINGS

Calif., Buena Park—DWELLINGS—Bonded Homes, 1940 Anaheim-Olive Rd., Anaheim, plans by Quigley, Davis & Clark, 43 Malaga Cave Plaza, Palos Verdes Estates, 57 frame, stucco dwellings, $750,000.

Calif., Rialto — DWELLINGS — Ralph Johnson & Geroge Bush, 1081 Donna Lane, Yucaipa, plans by James F. Lamb & Assoc., 349 E. Foothill Blvd., Rialto, 51 frame, stucco dwellings, in Tract 4845, $500,000.

▲ **Calif., Sacramento**—HOSPITAL ADDN.—Sutter Community Hospital, c/o Leonard F. Starks, archts., Native Sons Bldg., 3-story, 57,000 sq. ft. rein.-con. 98-bed hospital addn. $1,500,000.

Calif., San Bernardino—DWELLINGS—Morehart Land Co., 11661 Wilshire Blvd., Los Angeles, plans by Henry J. Friel, 1820 Elena St., Redondo Beach, 50 frame, stucco dwellings, $500,000.

▲ **Calif., Stockton**—COLLEGE BLDGS.—College of the Pacific, c/o Dean, N. Pacific Ave., addn. of South and West Halls to present structure, dining room, womens' dormitory, library, etc. $3,500,000.

Calif., Van Nuys—DWELLINGS—Lesin Homes, 316 S. LaBrea Ave., Los Angeles, 80 frame, stucco dwellings, $900,000.

Conn., New Haven—SCHOOL ADDN., etc.—St. Alden's Roman Catholic Church, Alden Ave., plans by Schilling & Goldbecker, 18 Trumbull St. New Haven, school addn., convent, Alden Ave. $800,000.

D. C., Wash.—APARTMENT—Albert Donald Corp., 1712 Rhode Island Ave. N.W., Wash., D. C., plans by E. Dreyfuss, 1019 15 St. N. W., Wash., D. C., 8 story, 50-unit apartment bldg., 5323 Connecticut Ave., N. W., $500,000.

▲ **Ill., Chicago**—OFFICE—Syndicate, c/o Collins Tuttle & Co., 261 Madison Ave., New York 17, N. Y., plans by William Lescanze, 211 E. 48 St., New York 17, N. Y. 20-story office bldg., Michigan Ave. and Adams St. $1,000,000.

▲ **Iowa, Mount Pleasant**—STUDENT UNION, etc. Iowa Wesleyan College, Mount Pleasant student union bldg., $400,000; Hall of Science $600,000. CD 12/30/47.

▲ **Ky., Lexington**—HOSPITAL—St. Joseph's Hospital, 554 W. Second St., plans by Potter, Tyler, Martin & Roth, 128 E. Sixth St., Cincinnatti, O., hospital, $4,200,000. Bids in the Spring.

▲ **Mich., Milford** — RESIDENTIAL DEVELOPMENT — Warren Realty Co., 801 Clyde Rd., Highland Hills residential development 225 acres, $5,000,000-$10,000,000.

▲ **Minn., Columbia Heights** — SHOPPING CENTER — Lakeland Development Co., Rev. E. W. Anderson, pres., 2406 N. E. Buchanan St., Minneapolis, shopping center incl. 12 units 80,000 sq. ft. floor space, west of Central Ave. N. E. between 43 and 44 Aves., $1,250,000.

Minn., Minneapolis—SCHOOL—Breck School, R. L. Erickson treas. and chn. bldg. comn., 2477 Como Ave., St. Paul, plans by M. & G. Buetow, 1931 University Ave., St. Paul, school on tract at East River Rd. and 42 St., $800,000. CD 10/13.

▲ **N. J., Stone Harbor**—MOTEL—Bayview Corp., 2803 Pacific Ave., Wildwood Crest, 581 unit motel, swimming pool, marina and shopping center, $7,000,000.

N. M., Los Lunas—HOSPITAL—Los Lunas Hospital & Training School, Los Lunas, plans by Flatow & Moore, 1840 Lomas Blvd., N.E., Albuquerque, hospital expansion, $500,000.

N. Y., New York—APARTMENT—Almit Holding Corp., c/o H. I. Feldman, archt., 415 Lexington Ave., Zone 17, 12 story apartment, 337-345 E. 52 St., $600,000.

N. Y., New York—OFFICE—Equinox Realty Co., 19 Rector St., plans by Alexander Zamshnick, 101 Park Ave., Zone 17, office alterations, 82-88 Greenwich St., $625,000.

▲ **O., Broadway Heights**—SHOPPING CENTER—Roy Conti, 4847 Turney Rd., Cleveland, Zone 25, plans by Nathan Bernstein, 4618 Euclid Ave., Cleveland, Zone 3, shopping center with department store, 24 smaller units, $2,500,000-$3,000,000. Constr. in March.

▲ **O., Canton**—STORE—A. Polsky Co., 225 S. Main St., Akron, enlarging downtown store from 45,000 to 90,000 sq. ft., $1,250,000.

▲ **O., Cincinnati**—HOSPITAL—Bethesda Hospital, Oak and Winslow Ave., plans by Potter, Tyler, Martin & Roth, 128 E. Sixth St., Cincinnati, hospital addn. to present facilities, $1,800,000. CD 9/15.

▲ **O., East Cleveland**—APARTMENTS—Charles Bernstein, National City Bank Bldg., Cleveland, Zone 14, plans by Wallace Teare, Citizens Bldg., Cleveland, Zone 14, two 10 story apartments, 2 underground garages cut into hillside, Superior Rd. 500 ft. south of Terrace, $2,500,000. CD 5/20/46.

▲ **O., Montgomery**—RESIDENTS—Myers & Cooper Co., 2649 Erie St., Cincinnati, residential development for 136 acre tract on Montgomery Ave., $10,000,000, James Wald & Assoc., 1721 Dallas Ave., Cincinnati, consult. engrs.

▲ **O., Norwalk**—HOSPITAL—Norwalk Memorial Hospital, Ray Gerken, pres., Norwalk, plans by H. E. Beyster & Assoc., engr.-archt., 700 Griswold Bldg., Detroit, Mich., hospital, $1,400,000.

O., Rocky River—HOMES—Gibbs Development Co., 137 Ingleside Dr., Berea, 30 ranch and split level homes Douglas Dr., $900,000. Constr. next summer.

O., Toledo — SHOPPING CENTER — Kroger Co., Carl Fuller branch mgr., Hill Ave., 6 to 8 unit shopping center incl. 30,000 sq. ft. supermarket on 7 acre site at corner Detroit and Monroe St., $750,000.

Pa., Phila.—DORMITORY—Moore Institute of Art, Science and Industry, 1920 Race St., plans by Harbison, Hough, Livingston & Larson, 117 S. 17 St., Phila., dormitory, $700,000. Sautor & Caster, 1411 Walnut St., and A. W. Lookup, 1505 Race St., consult. engrs.

▲ **Pa., Phila.**—RESIDENTIAL DEVELOPMENT—Owner, c/o Lewis Investors Associates, Att. Lewis Silverman, 1420 Walnut St., pains by Samuel I. Oshiver, 1704 Walnut St., residential development, Ford and Monument Rds., $15,000,000.

▲ **Pa., Phila**—HOSPITAL—Presbyterian Hospital, 319 W. Chelten Ave., plans by Chatfield & Schlicher, 319 W. Chelton Ave., hospital modernization, expansion and chapel, $4,000,000. CD 10/7.

Pa., Rosemont—CHURCH—St. Thomas of Villanova R. C. Church, Rosemont, church incl. schoolrooms, auditorium, $500,000. Constr. in 1956.

▲ **R. I., East Providence**—SHOPPING CENTER—Owner c/o Saul J. Copelman, 295 Washington St., Boston, Mass., plans by Sumner Schein, 271 Huntington Ave., Boston, Mass. 600,000 sq. ft. shopping center, incl. stores, super market, Taunten and E. Pawtucket Aves. est. $1,200,000. CD 12/9/52.

▲ **Tex., Arlington**—SHOPPING CENTER—M. C. Andrews, Jr. & Assocs., Grand Prairie, shopping center unit, Hillcrest Park, at Park Row and New York Ave. $2,000,000. CD 5/12/54.

Tex., Dallas—OFFICE—United Guaranty Life Insurance Co., c/o H. J. Griffith, Tower Petroleum Bldg., plans by Allen & Allen, c/o owner, 3-story office. $500,000.

▲ **Tex., Fort Worth**—CLUB—Athletic Club, c/o Joe Rowland, pres., 1128 Pennsylvania St., 7- to 8-story club. $1,000,000.

▲ **Tex., Fort Worth**—DWELLINGS—Marvin Leonard, c/o Leonard's 200 Houston St., 30 dwellings, $400,000; 18 dwellings, $347,500; 24 dwellings, $364,000; 22 dwellings, $351,192; 15 dwellings, $345,000; 28 dwellings,$384,510; 26 dwellings, $372,305 in 1,400-acre tract on Fort Worth's West Side.

▲ **Tex., Lubbock**—DWELLINGS—Kulp & Gibson, 50th St. at Elgin Ave., Lubbock and 6351 Camp Bowie St., Fort Worth, plans by Charles E. Armstrong, 6351 Camp Bowie St., Fort Worth, Job. 1, 30 dwellings, $420,000; Job 2, 25 dwellings, $355,000; Job 3, 33 dwellings, $391,115; Job 4, 31 dwellings, $381,000; Job 5, 28 dwellings, $378,615; Job 6, 23 dwellings, $345,125; Job 7, 27 dwellings, $372,225; Job 8, 35 dwellings, $395,500; Job 9, 26 dwellings, $369,500.

▲ **Tex., Pasadena**—SHOPPING CENTER—Gulf Coast Land & Development Co. (subsidiary of Tex-American Trust Co.) c/o Howard Tellepsen, 1710 Telephone Rd. San Antonio, regional shopping center, 83-acre site. $15,000,000.

▲ **Wash., Seattle**—HOUSES—Wilson-Phillips Contractors, 309 1 Ave. W., 232 houses near Eastgate shopping center east of city, $6,000,000.

▲ **Wash., Spokane**—SHOPPING CENTER—R. L. Stone Co., E, 7 Baldwin St., plans by H. C. Bertelsen, Empire State Bldg., shopping center, McDonald and E. Sprague Sts. in Spokane Valley. $2,000,000. Work on first unit to start this year.

▲ **Ont., Ottawa**—APARTMENT BLOCKS—Ottawa Commercial Realties Ltd., 227 Laurier Ave. E., Ottawa, 85-suite apartment blocks on Albert St. between Metcalfe and O'Connor Sts., $1,000,000.

Ont., Point Edward—HOTEL—Louis Berger, 147 Cecil St. and Max Zierler, 117 Cameron St., Sarnia, 2 story hotel, near Christina and Church Sts. $500,000.

▲ **Ont., Toronto**—APARTMENT BLOCKS, etc.—Consolidated Builders Corp., c/o Wilfred Shuman, archt., 1173 Bay St., Toronto, redevelopment scheme incl. 8 apartment blocks, incl. 1,547 suites all with balconies; underground parking for 1,237 cars, $17,322,000.

INDUSTRIAL BUILDINGS

Ala., Calera and Montevallo—PLANT—United Cement Co. Inc., Calera, cement plant in rural area between Calera and Montevallo on Hy. 25, $750,000.

Ark., Dierks—MILL, etc.—American Colloid Co., Merchandise Mart Plaza, Chicago, Ill., barite mill, lake, dam and processing plant, $500,000. McElwaine & Youst Co., Rector Bldg., Little Rock, consult. engrs.

▲ **Ill., River Grove**—FACTORY—Wilson Sporting Goods Co., 2037 N. Campbell Ave., Chicago, 360,000 sq. ft. factory $3,000,000.

▲ **Ky., Louisville**—MANUFACTURING BLDG.—General Electric Co., River Rd., Schenectady, N. Y., 264,000 sq. ft. mfg. bldg. 6, plus two 3,000 sq. ft. floors for addnl. office space, $5,000,000. CD 5/23/51.

Ky., Louisville—FREIGHT DEPOT AND OFFICE—Southern Railway System, G. H. Echols, ch. engr., P. O. Box 1808, Wash., D. C., plans by Chas. Roth, Transportation Bldg., Cincinnati, O., 2 story 51x306 ft., brick, concrete block, rein.-con. freight depot and office, $750,000.

▲ **Ky., Louisville**—PLANT—Stauffer Chemical Co., Camp Ground Rd., addnl. plant to mfg. carbon tetrachloride, chloroform, mertreline, chloride and anlydrons, hydrogen chloride, Camp Grounds Rd. $5,000,000.

Mass., Dedham-Westwood—WAREHOUSE AND OFFICE—United States Rubber Co., 560 Atlantic Ave., Boston, 1 story approx. 100,000 sq. ft. warehouse and office, Rte. 128, $750,000.

Mich., Saginaw—MANUFACTURING UNIT—OFFICE—U. S. Graphite Co. Div. of Wickes Corp., Smith Bolton, gen. mgr., 1621 Holland St., mfg. unit and office, $600,000.

▲ **Miss., Jackson**—WAREHOUSE—Mississippi Products, Inc., subsidiary of Sears Roebuck & Co., Livingston Rd., 1 story, 175,000 sq. ft. steel, masonry warehouse, $1,000,000.

N. D., Bismarck—WAREHOUSE—Super Value Stores, Inc., Hopkins, Minn., plans by Magney, Tusler & Setter, 303 Roanoke Bldg., Minneapolis, Minn., warehouse on Airport Rd., ½ mi. east of 19th St. railroad crossing. $700,000. CD 10/6.

▲ **Tex., Houston**—AUTO AGENCY—Rosenstock Motors, 2101 San Jacinto St., auto agency bldg., incl. paint, body, parts, auto storage, display rooms, etc., 10 acre site, in 9000 blk. Almeda Rd. $1,000,000.

▲ **Tex., Odessa**—PLANT—Texas Gulf Producing Co., Midland Natl. Bank Bldg., Midland, gas plant expans. expanding to 35 m. cu. ft. per day. $1,500,000.

▲ **W. Va., Ravenswood**—PLANT—Kaiser Aluminum & Chemical Corp., Kaiser Bldg., 1924 Broadway, Oakland, Calif. enlarge and complete aluminum plant. $75,000,000.

▲ **B. C., North Vancouver**—PLANT—Electric Reduction Co. of Canada, Ltd., 137 Wellington St., Toronto, Ont. new sodium chlorate plant, etc. $5,000,000. G. J. Crane, c/o owner, engr.

▲ **Ont., Hamilton**—PLATE MILLS—Dominion Foundries & Steel Ltd., Depew St., Hamilton, plate mills, extend dock loading facilities. $12,000,000.

▲ **Ont., Niagara Falls**—PLANT—B. F. Goodrich (Canada) Ltd., 251 King St. W., Kitchener, plant, $3,500,000. Work to start next spring.

UNCLASSIFIED

† **Calif., Camp Pendleton**—UTILITIES—11th Naval Dist., Dpt. Navy, San Diego, utilities, Marine Corp Base. $648,000 Appropriated.

† **Calif., Fallbrook**—ORDNANCE, AMMUNITION STORAGE—Dpt. Navy, San Diego, ordnance and ammunition storage Naval Ammunition Depot. $514,000. Appropriated. CD 1/8/51.

▲† **Calif., Port Hueneme**—MAINT. FACILITIES—Dpt. Navy, San Diego, maintenance facilities, Naval Construction Battalion Center, $1,225,000. Appropriated.

† **Calif., San Diego**—PAVING, PERSONNEL FACILITIES—Dpt. Navy, San Diego, paving and personnel facilities, Marine Corp Recruit Depot. $120,000. Appropriated.

▲ **Iowa**—RURAL DISTRIBUTION LINES—Central Iowa Power Co-operative, 219½ 3 Ave. S. W., Cedar Rapids, generating and transmission facilities, incl. plant at Prairie Creek near Cedar Rapids; 320 mi. rural distr. lines and substation, Linn Co. $11,173,000. Brown Eng. Co., 322 K.P. Bldg., Des Moines, consult. engr.

▲ **Pa., Levittown**—AMUSEMENT PARK—Owner c/o Lewis Investors Associates, Att. Lewis Silverman, 1420 Walnut St., amusement park, U. S. Rte. 1, $2,000,000.

▲ **Tex., Lubbock**—ELECTRIC—City, M. R. Tripp, mgr., City Hall, existing electric power sys. rehabilitation and imprvs. $750,000; electric lines, $2,043,000; street and traffic lights. $409,000. CD 12/29/52.

▲ **Tex., Pottsboro**—RESORT—Doak Walker & Assocs., c/o Lew Wallace, Sherman, resort to incl. clubhouse, zoned housing proj., golf course, boys ranch, underground utilities, roads, etc. 518-acre tract in area Lake Texoma, 7 mi. northwest of here. $2,500,000.

Alaska, Anchorage—ELECTRICAL DISTR. SYS.—City, City Hall, voted bonds Oct. 4, electrical distr. sys. expans. $600,000.

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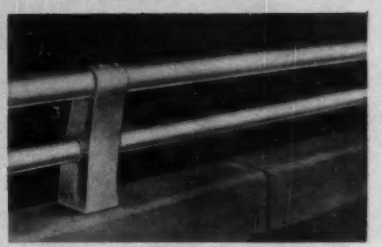

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STATE HIGHWAY LETTINGS
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October 31, November 7 Connecticut
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BUILDINGS—BA

R. I., Providence—SHOPPING CENTER—BA 11/3—Willard Center Realty Co., E. Harold Dick, atty., 622 Hospital Trust Bldg., shopping center, Willard Center Development. $500,000. Ira Rakatansky, 48 Arcade Bldg., archt. CD 6/9/54.

▲ **Mass., Littleton**—SCHOOL—BA 11/18—Town, Junior Senior High School Planning Comn., James Stuart, chn., Littleton, Junior-Senior High School, Pioneer Valley, $1,200,000. The Architects Collaborative, 99 Mt. Auburn St., Cambridge, archts. Goldberg-Le-Messurier Assoc., 739 Boylston St., Boston, struct. engrs. CD 2/28.

BUILDINGS—SLC

R. I., Warwick — MANUFACTURING — Natco Products Corp., 464 Dexter St., Providence, soon lets contract 1 story, 192x224 ft., brick manufacturing bldg., Industrial Park. $320,000. Samuel Lerner Assoc., 223 Thayer St., Providence, archts. CD 10/19.

HEAVY CONSTRUCTION—LB & CA

VERMONT—State Dpt. Hys., State Office Bldg., Montpelier,

Caledonia Sand & Gravel Co., 26 Railroad St., St. Johnsbury, Vt., LB **$236,906,** est. $250,000, highway constr. incl. 54 ft. beam bridge, Rte. US 5, Lyndon-Burke. Bids Oct. 14. CD 10/5.

† **James Farina,** 53 Bridge St., Newton, Mass. LB **$165,885.** Schedule 1, addnl. bldgs. for Special AAA Facilities, Boston area, ENG-19-016-54-46, MASSACHUSETTS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Spector & Montgomery, Falls Church, Va., archt. Bids Oct. 14. CD 10/5;
A. Cefalo & Sons, Inc., 42 Bennett St., Lynn, Mass. LB **$294,739.** Schedule 3 (Massachusetts); received no bids Oct. 14, for Schedule 2 (Massachusetts).

D. Arrigoni, 605 Main St., Middletown, Conn., LB, **$81,-892,** est. $85,000, sewers, appurtenances, Washington St. from Berlin St. to 300 ft. west Railroad Underpass, MIDDLETOWN, CONN. City, P. Wks., Municipal Bldg., Middletown, Conn.

BUILDINGS—LB & CA

Harvey Constr. Co., Inc., 450 Valley St., Manchester, N. H. CA **$344,687,** est. $300,000. FACTORY addn., alterations, MANCHESTER, N. H. International Paper Co., 287 Hall St., Manchester, N. H. Bids Oct. 7. CD 10/5.

Charles H. Cunningham Co., Mill Pond Rd., West Yarmouth, Mass. LB **$620,000.** Barnstable and West Barnstable Elementary SCHOOL, Main St., BARNSTABLE, MASS. Town, P. Gordon Nelson, chn. School Comn., Barnstable, Mass. Bids Oct. 14. CD 9/29.

Donald Snyder & Son, Inc., 36 Comee St., Gardner, Mass. LB **$959,452,** JUNIOR-SENIOR HIGH SCHOOL, Mass. Ave., LUNENBERG, MASS. Town, Leslie O. Griffith Jr., Senior High School Bldg. Comn., School Dpt., Maurice P. Billings, supt., Turnpike Rd., Lunenberg, Mass. Bids Oct. 14. CD 10/4.

▲ **The Austin Co.,** 450 W. First Ave., Roselle, N. J., CA, **$1,500,000.** 320x475 ft. industrial MANUFACTURING BLDG., Willard Ave., NEWINGTON, CONN. Fafnir Bearing Co., 37 Booth St., New Britain, Conn. CD 6/21/51.

Frechette & Floryan, Inc., 64 Edwards St., Hartford, Conn., LB, **$698,900.** Elementary SCHOOL Braeburn Rd., WEST HARTFORD, CONN. Town, School Bldg. Comn., Town Hall, West Hartford, Conn. Bids Oct. 14. CD 10/10.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 7 New Jersey

† **N. Y., Niskayuna**—AIR FLOW TEST FACILITY—BA 11/2—U. S. Atomic Energy Comn., Schenectady Operations Office, Post Office Box 1069, Schenectady, TF-5 flow test facility, Knolls Atomic Power Laboratory, River Rd., Schenectady Co., Inv. AE-56-SCH-170, $30,000-$80,000.

N. Y., Kingston—BA 11/9—U. S. Property & Fiscal Officer for New York, New York State Arsenal, 201 64 St., Brooklyn, Zone 20, imprv. tank and pump area State Armory Property Site, Inv. No. NG-30-192-56-9.

† **N. Y., Westhampton**—PAVING and POL FACILITIES—BA 11/10—U. S. Eng., 111 E. 16 St., New York, Zone 3, paving and POL facilities, Suffolk County Air Force Base, ENG-30-075-56-153. CD 10/12.

▲† **N. Y., Plattsburgh**—AIRFIELD FACILITIES—BA On Or About 11/22—U. S. Eng., 111 E. 16 St., New York, Zone 3, constr. airfield facilities, addnl. bldgs. (FY 1956 program), incl. addnl. bldgs., hangars, hangar access aprons, utilities, railroad sidings, roads, driveways, etc., Plattsburgh Air Force Base, ENG-30-075-56-57. $1,000,000-$2,500,000. Plans deposit $100. CD 10/20.

† **N. Y., Niagara Falls**—MISC. BLDGS., etc.—BA On Or About 11/30—U. S. Eng., 111 E. 16 St., New York, Zone 3, misc. bldgs. and approach lighting (FY 1956), incl. fire station addn., technical laboratory, N.C.O. club, officers' club addn., club service bldg., etc., Niagara Falls Air Force Base, ENG-30-075-56-116. $500,000-$750,000. Plans deposit $25. CD 10/10.

† **N. Y., Hempstead**—TRAINING CENTER—BA About 12/15—U. S. Eng., 111 E. 16 St., New York, Zone 3, Air Reserve Training Center, FY 1956, $100,000-$500,000. Embury & Lucas, 150 E. 61 St., New York, Zone 21, archts.

BUILDINGS—BA

D. C., Wash.—LIBRARY—BA 11/4—D.C. Govt., Dir. Bldgs. Grounds, 499 Pa. Ave. N.W., Cleveland Park Branch Library Addn., Connecticut Ave. and Macomb St. N.W. Plans deposit $25. CD 3/9/53.

N. J., Morris Plains—SCHOOL—BA 11/17—Bd. Educ., Morris Twp., Speedwell Ave., Contract No. 1, general construction; Contract No. 2, structural steel and misc. metal; Contr. No. 3, plumbing and drainage; Contr. No. 4, heating, ventilating, Contr. No. 5, electrical work Hillcrest Elementary School in Morris Twp. Plans deposit $50. Kelly & Gruzen, 744 Broad St. Newark, Zone 2, archts.

▲† **N. Y., West Point**—ACADEMIC—BA 11/30—U. S. Eng., 111 E. 16 St., New York, Zone 3, converting riding hall to academic bldg., U. S. Military Academy, ENG-30-075-56-14, $5,000,000-$7,500,000. CD 10/12.

BUILDINGS—SLC

▲ **Pa., Pittsburgh**—SCHOOL, etc—Catholic Diocese of Pittsburgh, 125 N. Craig St., soon lets contract, 2 and 3 story, 100x600 ft., steel, South Catholic High School and faculty residence, stadium, parking area, Scott Twp. $2,500,000. Celli Flynn, 335 Shaw Ave., McKeesport, archt.

HEAVY CONSTRUCTION—LB & CA

Charles F. Vachris, Inc., 9024 Ditmas Ave., Brooklyn, 36, N. Y. CA **$519,200.** (6 bidders) Contr. B.P. 55-51 Part III, beach protection (4 stone groins) at Atlantic Branch, town of Hempstead, Nassau Co., NEW YORK. Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. CD 9/20, under LB.

▲ **General Electric Co.** 570 Lexington Ave., New York, N. Y. CA **$1,900,000.** Installation, constr. 16 generators for Barnhart Island Power Plant of St. Lawrence Power Proj. NEW YORK. The Power Authority of State of New York, 270 Broadway, New York 7, N. Y. CD 8/18/54.

Judson, Pacific Murphy, Emeryville, Calif. LB **$698,-679.** three cranes, Barnhart Island Plant, NEW YORK. Power Authority of the State of New York, 270 Broadway, New York 7, N. Y. Bids Oct. 19. CD 9/22.

† **Wright & Kremers Constr. Co.,** Pine Ave. and Main St., Niagara Falls, N. Y. LB **$652,037.** (3 bidders) operation and training bldg., Air National Guard Facilities (FY 1955) Niagara Falls Air Force Base, ENG-30-075-56-125, NIAGARA FALLS, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Oct. 18. CD 9/23.

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton, Zone 1,

Brann & Stewart Co., Suburban Station Bldg., Phila., Pa., LB, **$1,350,149.** (6 bidders) piers and foundations for new Barnegat Bay Bridge between Manahawkin and Ship Bottom, Ocean Co., F-130 (4). Bids Oct. 18. CD 9/29.

▲ **PENNSYLVANIA**—State Hy. Dpt., 560 N. Office Bldg., Harrisburg,

F. D. Kessler, Inc., Northumberland, Pa. CA **$3,067,-961.** divided hy., rein.-con. pavement 24 ft. wide on each side of concrete divisor area 4 ft. wide, two I-beam bridges, paving interchange ramps, grading 72 ft. in width, open spandrel rein.-con. arch bridge with I-beam approach spans and one I-beam bridge 1.08 mi. in Hamburg Borough and vicinity. T.R.U.S. 22, Berks Co. CD 10/5, under LB.

† **George Vang, Inc.,** 623 Grant Bldg., Pittsburgh 19, Pa. CA **$246,728.** constr. second and third units of Johnsonburg Flood Protection Proj., West Branch, Clarion River and Silver Creek, Elk Co., CIVENG-36-058-56-8, PENNSYLVANIA. U. S. Eng., 905 New Federal Bldg., Pittsburgh 19, Pa. CD 8/18.

Chas. J. Spielman, 2901 Maisel St., Baltimore 30, Md. LB **$203,685.** Items 1, 2 and 3. Contr. 453 D.S.&W. group bids, various locations, TOWSON, MD. Comrs., Baltimore Co. Court House, Towson, Md. Bids Oct. 6. CD 9/26;
L. M. Bautz, 912 Stevenson Lane, Towson 4, Md. LB **$86,183.** Items 4, 5 and 6 (Towson, Md.).

BUILDINGS—LB & CA

Red Mill Estates, c/o Peekskill Realty Co., 105 N. Division St., Peekskill, N. Y. Owner Builds. **$375,000.** 25 HOMES on tract on Lexington Ave., CORTLAND, N. Y.

J. C. Felton Co., 2612 West Second St., Brooklyn, N. Y. CA **$925,000.** (14 bidders) 100-family slum clearance HOUSING, Glen Cove Rd. and Burns Ave., GLEN COVE, N. Y. Glen Cove Housing Auth., Bridge St., Glen Cove, N. Y. CD 9/26, under LB.

▲ **Fritz Gold, Inc.,** 323 Central Ave., Lawrence, N. Y. CA Est. **$1,350,000.** 30 HOUSES on 27 acre tract, LAWRENCE, N. Y. Rock Hall Homes, c/o contractor. Fritz Gold, c/o contractor, archt.

▲ **Lasker-Goldman Corp.,** 50 E. 42 St., New York 17, N. Y. CA **$1,767,000.** (11 bidders) general constr. LIBRARY of City College, South Campus, (Manhattanville) NEW YORK, N. Y. Bd. Higher Educ., the City College Business Office, Brett Hall, 136 St. and Convent Ave., New York 31, N. Y. CD 9/23, under LB.

Mars Associates, Inc. & Normel Constr. Co., 132 Nassau St., New York 7, N. Y. LB **$607,000.** (9 bidders) general contract modernization and conversion to JUNIOR HIGH SCHOOL, NEW YORK, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Oct. 18. CD 9/19.

▲ **I. P. A. Associates,** 4 Westgate St., Farmingdale, N. Y. Owner Builds. **$1,000,000.** Oakdale-Sayville SHOPPING CENTER, incl. 40 stores, parking area on 9 acre tract on Montauk Hy., OAKDALE, N. Y.

Saxony Terraces, Inc., c/o Peekskill Realty Co., 105 N. Division St., Peekskill, N. Y. Owner Builds. **$450,000.** 30 HOUSES on tract near Hillcrest School, PEEKSKILL, N. Y.

▲ **Ocean Gateway Pines Homes,** 500 Fifth Ave., New York 36, N. Y. Owner Builds. **$7,000,000.** 800 HOUSES on tract on William Floyd Parkway, SHIRLEY, N. Y. Charles Goodman, c/o owner, archt.

Kensington Estates Homes, c/o M. Leonard Levine, archt., 28 Van Houten Ave., Passaic, N. J. Owner Builds. **$500,000.** 20 HOUSES on tract at Hollywood Ave., near Passaic Ave., CLIFTON, N. J.

▲ **Ferguson Constr. Co.,** 152 Market St., Paterson, N. J., CA, **$1,000,000.** 1 story WAREHOUSE and 2 story OFFICE, Rahway Ave., WOODBRIDGE, N. J. Metal & Thermit Corp., 100 E. 42 St., New York 17, N. Y. Bids Sept. 6. CD 8/26.

▲ **H. B. Alexander & Son,** 315 Vaughn St., Harrisburg, Pa. CA **$1,000,000.** branch OFFICE and SERVICE BLDG. 19 and Brookwood Sts., HARRISBURG, PA. Pennsylvania Power & Light Co., Ninth and Hamilton Sts., Allentown, Pa. CD 9/8.

P. F. Dulaney, 216 C St. N.W., Wash., D. C., LB **$598,-445,** 2 men's DORMITORIES, WASH., D. C. American University, Massachusetts and Nebraska Aves. N.W., Wash., D. C. Bids Oct. 13. CD 9/28.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 4 Tennessee
STREETS AND ROADS
November 4 Tennessee

† **North Carolina**—BA 11/4—U. S. Eng., 308 Customhouse, Wilmington, dredging, Taylors Creek Beaufort Harbor, CVENG-31-075-56-13.

Va., Fairfax—BA 11/14—At office Harry L. Hale, sanitary engr., Fairfax County, Fairfax, Contr. 37A, approx. 4,800 lin. ft. 30- to 42-in. sanitary sewers, appurtenances. Plans deposit $10; adv. ENR 10/27. CD 12/22/53.

† **S. C., Sumter**—WATER SUPPLY SYSTEM—BA About 11/30—U.S. Eng., 31 Customhouse, Charleston, water supply sys., Shaw Air Force Base, Shaw Field, Eng-38-081-56-29. CD 9/25/51.

BUILDINGS—BA

Ky., Louisville—FACTORY—BA 11/3—American Saw & Tool Co., 510 Main St., 1 story, 200x280 ft. concrete slab factory. $300,000. Arne Bodholt, 343 S. Dearborn St., Chicago, Ill., archt.

W. Va., Parkersburg—SCHOOL—BA 11/10—Bd. Educ., Wood Co., Parkersburg, 2 story, block, brick Hamilton Junior High School, North Parkersburg, $500,000. Chas. J. Ross & Assocs., 307 13 St., archts. CD 8/26.

Ky., Lexington—SCHOOL—BA 11/4—Lexington Catholic High School, 240 N. Lime St., 1 story, brick veneer concrete slab floor school, gymnasium, $450,000. Plans deposit $40, refundable, Meriwether & Marye & Assoc., 248 E. Short St., archts. Proctor & Ingles, 915 S. Limestone St., engrs. CD 9/9.

HEAVY CONSTRUCTION—LB & CA

Carpenter Constr. Co., Bank of Commerce Bldg., Norfolk, Va., LB, **$588,361.** combined sewage pumping and headquarters office bldg., NORFOLK, VA. Hampton Roads Sanitation Dist. Comm., Board of Trade Bldg., Norfolk, Pa. Bids Oct. 17. CD 10/13.

NORTH CAROLINA—State Hy. & P. Wks., Comn., Raleigh, N. C.—**Jesse M. Coble,** Box 664, Greensboro, N. C., CA **$233,718,** Part A;
N. C.—Clinchfield Concrete Co., Greensboro, N. C., CA **$225,203,** Part B, structures on 8.63 U. S. 29 (reloc) Proj. 6735, IN-FI-708 (2), Rowan Co. Bids Sept. 27, awarded Oct. 3. CD 9/30 under LB.

† **Clemens Constr. Co.,** P. O. Box 3331, West Palm Beach, Fla., CA, **$904,300.** Levee 6, Central & Southern Florida Flood Control Proj. CIVENG-08-123-56-6. FLORIDA, U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Sept. 7. CD 9/19, under LB.

▲ **Sullivan-Long & Hagerty,** 2028 2 Ave. N., Bessemer, Ala., LB $1,495,746. Contract No. 4, Village Creek Sewage Treatment Plant, BIRMINGHAM, ALA. Jefferson Co. Court House, Birmingham, Ala. Bids Sept. 20. CD 8/29.

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,
La.—**T. L. James & Co.,** Ruston, La. LB $541,677. (2 bidders) c. conc. 4.753 mi. Red Point-Fillmore Hy., State Rte. 4, S.P. 1-03-26, FAP No. FI-75 (11), Bossier Parish;
La.—**Anderson & Courtney,** Amite, La. LB $240,164. (2 bidders) shaping roadway 6.866 mi. Franklington-Pine High., State Rte. 469, S.P. 274-01-05, Washington Parish;
La.—**Barber Bros. Co.,** 2636 Dougherty Drive, Baton Rouge, La. LB $99,930. (2 bidders) c. conc. 0.424 mi. Pinhook Rd., Rtes. LA-US 90 and LA 94, S.P. 4-01-15 and 4-32-06, Lafayette Parish; LB $212,217. aggregate type base course 7.792 mi. S.R. 2204, East Baton Rouge Parish;
La.—**Continental Constructors Inc.,** Box 407, Baton Rouge, La. LB $664,386. (2 bidders) aggregate type 16.964 mi., concrete slab span bridges, Hackberry-Holly Beach Hy., State Rte. LA 27, S.P. 31-02-09, FASP S 188 (6), Cameron Parish;
La.—**Cunningham & McCullen,** 3021 Darien St., Shreveport La. LB $126,989. (2 bidders). aggregate type 7.029 mi. Springville-Millerton and Springhill-Haynesville Hys., State Rte. 1345 and 2183, S.P. 84-04-02, 85-05-06 and 814-04-03, Webster and Claiborne Parishes;
La.—**Hall & Holland,** Montgomery, La. LB $81,876. (2 bidders). aggregate type 3.109 mi. Perryville-Collingston Hy., State Rte. 831, S.P. 160-02-07, Morehouse Parish; LB $177,455. shaping road 7.98 mi. Elmwood-Lopp Hy., State Rte. 1285, S.P. 818-06-95, East Carroll Parish;
La.—**J. G. Madden,** Minden, La. LB $132,838. (2 bidders) aggregate type 8.198 mi. Minden-Sikes Ferry Hy., State Rte. 947, S.P. 288-02-04, Webster Parish;
La.—**Texas Bitulithic Co.,** Burma Rd., New Orleans, La. LB $290,831. (2 bidders). wid'n. c. conc. 5.645 mi. Chalmette-Violet Hy., State Rte. 39, S.P. 46-03-21, St. Bernard Parish. Bids Oct. 12. CD 9/22.

LOUISIANA — State Hy. Dpt., Highway Office Bldg., Baton Rouge,

Kansas City Bridge Co., Plaquemine, La. LB $203,236. (2 bidders) furnishing, placing ballast around bridge piers, pier protection Chef Mentour and Rigolets Bridges, State Rte. 2, S.P. 6-05-25 and 6-06-18, Orleans and St. Tammany Parishes. Bids Oct. 12. CD 9/27.

Salde & McElroy, Inc., Box 255, Gulfport, Miss. LB $251,820. (3 bidders). water distr. sys. addns., alterations, HOUMA, LA. City, Houma, La. Bids Oct. 12. CD 10/4.

† **Jesse E. Wood,** P. O. Box 510, Rayville, La., CA, $69,972. channel cleanout, enlargement and new ditch, Item L-841D, Running Reelfoot Bayou, Miston, CIVENG-40-041-56-35, TENNESSEE, U. S. Eng., P. O. Box 97, Memphis 1, Tenn. Bids Oct. 5. CD 9/19.

† **Baldwin-Lima-Hamilton Corp.,** Chester Pk. and Simpson St., Eddystone, Phila., Pa., CA, $135,500. 216 in. hydraulically operated steel butterfly valve for Propulsion Wind Tunnel, Arnold Eng. Development Center, Contr. DA-40-126-Eng-189, TULLAHOMA, TENN., U. S. Eng., Tullahoma, Tenn. CD 11/16/54.

BUILDINGS—LB & CA

▲ **Tower Constr. Co.,** 1726 "L" St. N.W., Wash., D. C. Owner Builds. $1,800,000. 9 bldg. addn., 189 units to Park Shirlington APARTMENT, ARLINGTON, VA. J. Saunders, 1521 M St., N.W.Wash., D. C., archt.

Litle Constr. Co. Inc., Builders Bldg., Charlotte, N. C., LB $497,700, INFIRMARY, ADMINSTRATION BLDG., and KITCHEN, BUTNER, N. C. State Hospital Bd. Control, Capitol Bldg., Raleigh, N. C. H. Raymond Weeks, Inc., Durham, N. C. Bids Oct. 6. CD 11/18/53.

Jesse F. Heard & Son, Box 3566, West Monroe, La. LB $542,357. 60,000 sq. ft. masonry SHOPPING CENTER incl. 8 stores, Cypress, Crosley and Trenton Sts., WEST MONROE, LA. J. W. McLemore Jr., Winnsboro, La. Bids Oct. 12. CD 10/10.

Canfield, Badgett & Scarbrough Co., 1850 Union Ave., Memphis, Tenn., LB, $460,000. brick, steel, lumber. Women's DORMITORY, Memphis State College, MEMPHIS, TENN. State of Tennessee, Nashville, Tenn.; **Sam P. Maury Constr. Co.,** 554 Adams Ave., Memphis, Tenn., LB, $406,577. brick, steel, wood, men's DORMITORY (Memphis, Tenn.)

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 1 Illinois November 8 Ohio

STREETS AND ROADS

November 1 Illinois November 8 Ohio

▲† **Illinois**—SPECIAL AAA and RELATED WORK—BA 11/3—U. S. Eng., 475 Merchandise Mart, Chicago, Zone 54, Special AAA and related work, Sites C-44, Dual and C-43H, Cook County, Serial No. ENG-11-032-56-16. CD 10/6.

Wis., Milwaukee—BA 11/7—Sewerage Comn. of City of Milwaukee, Jones Island, intercepting sewers in S. Howell Ave. $200,000. Plans deposit $5. R. D. Leary, ch. engr. CD 9/7.

Wis., Milwaukee—BA 11/7—Sewerage Comn. of City of Milwaukee, Jones Island, imprv. Lincoln Creek from Fairmount Ave. to Silver Spring Dr. $100,000. Plans deposit $5. Ray D. Leary, ch. engr.

Ill., Germantown—BA 11/9—Village, Village Hall, sewage treatment plant, sewage collector sys., water works addns., water mains. $349,448. Caldwell Rhodes Co., W. College Ave. and Diamond St., Jacksonville, engrs. CD 12/15/48, under Water Supply.

BUILDINGS—BA

Mich., Wyandotte—POWER PLANT—BA 11/21—City, Municipal Service Comn., Contr. 4, power plant, steam generating unit of 210,000 lbs. per hr. capacity. Emery, Marker & Campbell, Toledo Trust Bldg., Toledo, O., engrs. CD 9/29.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,
O.—**W. J. Seidensticker Co.,** 3585 E. Fulton St., Columbus, O. LB $858,498, est. $884,200. (5 bidders) Type T-35 on B-20 and structure 1.978 mi., CR No. 59-C, D, S-100 (1), city of Upper Arlington, city of Columbus, Franklin Co.;
O.—**S. E. Johnson Co.,** P.O. Box 29, Maumee, O. LB $559,750, est. $569,700. (1 bidder) Type T-35 and structures 6.895 mi., USR 6 (0.00-6.26) Sandusky-Wood, Village of Helena, Sandusky Co.;
O.—**The Koski Constr. Co.,** 4544 Main Ave., Ashtabula, O. LB $204,230, est. $219,000. (1 bidder) Type T-35 3.466 mi., SR 531 (10.27-11.48), city of Ashtabula, Ashtabula Co.;
O.—**Lombardo Brothers Constr. Co.,** 3600 Ridge Rd., Cleveland, O. LB $170,685, est. $174,700. (4 bidders) Type T-35 1.645 mi., SR 82-(10.89-12.62) villages of Broadview Heights and Brecksville, Cuyahoga Co.;
O.—**Legg & Davis Contractors,** 830 W. Lane Ave., Columbus, O. LB $91,697, est. $83,400. (2 bidders) Type various 0.746 mi., USR 36-22-22.17, SR 3-20.14, USR 33-10.41, SR 665-16.17, Delaware and Franklin Counties;
O.—**Harley E. Calvin & Co.,** Box 284, Marietta, O. LB $283,173, est. $316,900. (6 bidders). Type T-32 on B-119 and structure 1.68 mi., SR 664-(18.77) (21.23), (21.95) (23.00), Hocking Co.;
O.—**John G. Witten,** Sardis, O. LB $228,777, est. $276,500. (7 bidders) Type T-71 and pipe culvert 0.896 mi. SR 7-25.35, Monroe Co.;
O.—**Shelly & Sands, Inc.,** Thornville, O. LB $428,708, est. $411,000. (2 bidders). Type T-35 and structure 1.922 mi. USR 22-(8.12-9.85) village of South Zanesville, city of Zanesville, Muskingum Co. Bids Oct. 11;
O.—cancelled bids to have been opened Oct. 11, Type T-35 on B-119 and structures 0.521 mi. SR 590-(7.90) (9.03) (11.44) (13.28) village of Lindsey, Ottawa and Sandusky Counties. CD 9/20.

† **Merritt-Chapman & Scott Co.,** Standard Bldg., Cleveland 13, O. LB $590,118, est. $499,476. removal 91,000 cu. yd. earth material, about 119,000 cu. yd. ledge rock from new eastern portion of Ashtabula Harbor, OHIO. U. S. Eng., Engineer Park, Buffalo 7, N. Y. CD 9/23.

General Constr. Co., 1221 E. Fifth Ave., Columbus, O. LB $431,860. Beulah Rd. trunk sewer from Oakland Park Ave. to northern limits of Chaseland Manor; LB $86,270. exten. same line farther north to Rte. 161, COLUMBUS, O. City, City Hall, Columbus, O. Bids Oct. 11. CD 9/28.

ILLINOIS—State Div. Hys., Springfield,
Jansen & Schaefer, 1500 Broadway, Pekin, Ill., CA, $807,512. c. conc. paving 1.13 mi., earth grading 0.25 mi., bridge approach over Illinois River east of U.S. Route 150, Tazewell Co. Bids Sept. 27, awarded Oct. 15. CD 10/3, under LB.
American Asphalt Paving Co., 9701 S. Torrence St., Chicago, Ill., LB, $339,317, paving, underground work Jeffrey Blvd., 67 to 97 Sts., CHICAGO, ILL. Chicago Park Dist., 425 E. 14 St., Chicago 5, Ill. Bids Oct. 6.
Chicago Park District, 425 E. 14 St., Chicago 5, Ill., rejected bids FIELDHOUSE and 2 GYMNASIUMS at Jackson Park, CHICAGO, ILL. Est. $875,000. CD 6/11/45.
Wetherby Constr. Co., 1016 Superior St., Ottawa, Ill., CA, $466,000. road surf. and bridge EARLVILLE, ILL. LaSalle Co., Earlville, Ill. Awarded Oct. 13.
Sangamo Constr. Co., 700 MacArthur Blvd., Springfield, Ill., CA, $633,552, water treatment plant, SPRINGFIELD, ILL. City, City Hall, Springfield, Ill. Bids Sept. 20, awarded Oct. 13. CD 9/26, under LB.
Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago, Ill. CA $60,690. steel reservoir FOX POINT, WIS. Village, 8340 N. Lake Dr., Milwaukee 17, Wis. Bids Sept. 27. CD 9/21.

† **Becker Constr. Co. Inc.,** 7701 W. Blue Mound Rd., Milwaukee, Wis., LB, $124,927, est. $129,120 (8 bidders) warehouse, General Mitchell Field, ENG-11-032-56-5, MILWAUKEE, WIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Oct. 14.
Coles-Jeffrey Constr. Co., Ltd., 175 Exmouth St., Sarnia, Ont. CA $416,010 (5 bidders) warehouse, office, maintenance bldg. and inspection booths on Canadian Plaza of Blue Water Bridge, Point Edward, Ont., MICHIGAN-ONTARIO. Michigan State Bridge Comn., 1410 Elmwood St., Port Huron, Mich. Bids Oct. 6, awarded Oct. 11. CD 9/16.
City, Frederick Soule, clk., City Hall, Mount Clemens, Mich. rejected bids Aug. 26, water filtration plant addn., MOUNT CLEMENS, MICH. CD 8/15.
Denton Constr. Co., 20415 Mack Ave., Grosse Pointe Woods 36, Mich. CA $138,867. c. conc. Ten Mile Rd. from U. S. 25 to Hayes St., MOUNT CLEMENS, MICH. Bd. Rd. Comrs. Macomb Co., County Bldg., Mount Clemens, Mich. Bids Sept. 6. CD 9/2.
City, Ada R. Evans, clk., Pontiac, Mich. Owner Builds. $578,000. off street parking facilities, PONTIAC, MICH. Lewis W. Wrenn, city engr. CD 2/27/53.

BUILDINGS—LB & CA

Richard A. Keller, 12429 Cedar Rd., Cleveland Heights, O. Owner Builds. $500,000. 2 story, 125x306 ft., brick OFFICE, known as Agents Bldg., 3537 Lee Rd., SHAKER HEIGHTS, O.

▲ **R. A. Gall Constr. Co.,** 4815 Pearl Rd., Cleveland 9, O. Own Forces. $1,100,000. 85 Bruscino Ex-Pan HOMES on site 4 mi. south of STRONGVILLE, O. Bruscino-Ex-Pan Homes, Inc., 15411 Chatfield St., Cleveland 11, O., archt.

▲ **W. B. Gibson Co.,** Warren, O. CA Est. $1,500,000. SHOPPING CENTER addns., 200x225 ft. bldg. at west end of Miracle Mile Shopping Center, Jackman and Laskey Rds.; Est. $600,000. 80x100 ft. BUILDING at southeast corner of center, TOLEDO, O. Don M. Casto & Assoc., 145 N. High St., Columbus, O. C. Melvin Frank, 185 E. State St., Columbus, O., archt.

F. M. Knight Realty Co., 6055 College Ave., Indianapolis, Ind. Owner Builds, $550,000. HOMES in Northridge Addn., INDIANAPOLIS, IND.

Ostrom Constr. Co., K of P Bldg., Indianapolis, Ind., Owner Builds, $400,000 or more, OFFICE, INDIANAPOLIS, IND.

R. D. Robbins Co., 109 E. Sycamore St., Kokomo, Ind., Owner Builds, $400,000 or more. HOMES in new subdivision, KOKOMO, IND.

▲ **Brinker Heights Realty Co.,** Glass Block, Marion, Ind., Owner Builds, $2,000,000. 200 HOMES in Brinker Heights, east of MARION, IND.

Goff Real Estate Co., Glass Block, Marion, Ind., Owner Builds, $400,000 or more, new HOMES, MARION, IND.

John H. Price, Plainfield, Ind. Owner Builds, $750,000. HOMES, near PLAINFIELD, IND.

▲ **Sumner Sollitt Constr. Co.,** 307 N. Michigan Ave., Chicago 1, Ill., CA, $1,250,000. 2 story, brick OFFICE, CHICAGO, ILL. Federal Life Insurance Co., 168 N. Michigan Ave., Chicago, Ill. Awarded Oct. 10.

▲ **Hatlen Constr. Co.,** 8324 Ferragut St., Chicago, Ill., Owner Builds, $6,000,000. 310 HOMES, CHICAGO, ILL. James Viger, 1000 Northwest Highway Mount Prospect, Ill., archt.

A. M. Sunrise Constr. Co., 2435 W. 71 St., Chicago, Ill., Own Forces, $900,000. 80 HOMES, CHICAGO HEIGHTS, ILL. John L. Bartolomeo, 10834 S. Western Ave., Chicago, Ill., archt.

Lincoln Constr. Co., 4814 N. Damen St., Chicago, Ill., CA, $300,000. FACTORY, 47 Ave. at 13 St., CICERO, ILL. Royal Consolidated Box Co., Cicero, Ill. Albert Belrose, 5611 W. Chicago St., Chicago, Ill., archt. Awarded Oct. 14.

Glenwood Homes, Inc., 322 St. Charles Rd., Glen Ellyn, Ill. Own Forces, $760,000. 60 HOMES, GLEN ELLYN, ILL.

Joseph J. Duffy Co., 4994 N. Elston St., Chicago, Ill., LB, $985,288, general contract West Side HIGH SCHOOL, JOLIET, ILL. School Dist. No. 86, G. A. Hufford, supt. Schools, 153 S. Ottawa St., Joliet, Ill. Bids Oct. 5. CD 9/20.

Alpers Home Builder, 5127 Dempster St., Morton Grove, Ill. Owner Builds, $500,000. 30 HOMES, MORTON GROVE, ILL.

Original Home Builders, 6253 Milwaukee Ave., Chicago, Ill., Owner Builds, $410,000. 17 HOMES, NILES, ILL. B. J. Bruns, 4734 N. Hermitage St., Chicago, Ill., archt.

Roland C. Buck, Inc., 1225 Tower Ave., Superior, Wis., CA, $100,000. LIME PLANT addn., SUPERIOR, WIS. Cutler-LaLiberte-McDougall Corp., Superior, Wis.

S. M. Byrne Constr. Co., 3100 W. Burleigh St., Milwaukee, Wis., CA, $742,500 (4 bidders) general contract. CHURCH, SCHOOL and CONVENT, WAUWATOSA, WIS. Little Flower Catholic Congregation, 9419 W. Adler St., Wauwatosa, Wis. Bids Sept. 27. CD 9/21.

▲ **Ira Hotchkiss Co.,** 15030 Wyoming St., Detroit, Mich. Owner Builds. $1,350,000. 150 HOMES Monroe Blvd. and Van Born section, east of Telegraph Rd., DEARBORN, MICH.

W. E. Wood Co., 4649 Humbolt St., Detroit, Mich. CA Est. $975,000. PLANT addn., Lynch Rd., DETROIT, MICH. Chrysler Corp., 600 Lynch Rd., Detroit, Mich. Smith-Hinchman & Grylls, 800 Marquette Bldg., Detroit, Mich., archts.

Erickson & Lindstrom, Flint, Mich. CA Est. $450,000. Elementary SCHOOL, Fern and Marris Ave., FLINT, MICH. Burton Twp. School Dist. 5, 4093 Barnes Ave., Flint 7, Mich. Bids Sept. 19. CD 9/2.

▲ **E. L. Lieberman,** 523 Hammond Bldg., Detroit, Mich. CA Est. $2,400,000. Pottawatomie Woods 100 brick ranch HOMES, GROSSE ILE, MICH. Wittbold & Co., Church Rd. and Park Lane, Grosse Ile, Mich.

▲ **Karam, Inc.,** 28920 Alger St., Royal Oak, Mich. Owner Builds. $1,250,000. 100 brick HOMES, 12 Mile Rd., ROYAL OAK, MICH.

▲ **Sussex Building Co.,** 20021 Martin Rd., St. Clair Shores, Mich. CA Est. $1,400,000. Gordon Rock Subdivision 110 HOUSES Martin Rd. and Bestes St. ST. CLAIR SHORES, MICH. Stiber Realty Co., 4650 Chene St., Detroit, Mich.

▲ **General Electric Co.,** River Rd., Schenectady, N. Y. CA $799,000. POWER PLANT Contr. No. 2, 22,000 kw steam turbine generating unit, WYANDOTTE, MICH. City, Municipal Service Comn., Wyandotte, Mich. Grand Total $1,214,000. Bids Aug. 29. Awarded Sept. 28. CD 8/18;
Westinghouse Electric Mfg. Co., 401 Liberty Ave., Pittsburgh, Pa. CA $275,000. POWER PLANT

Contr. No. 1, four outdoor sub-stations (Wyandotte, Mich.).
C. H. Wheeler Mfg. Co., 19 and Lehigh Sts., Phila., Pa. CA approx. $140,000. POWER PLANT Contr. No. 3 surface condenser for 22,000 kw steam turbine generating unit (Wyandotte, Mich.).

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS

November 3 Kansas November 8 Colorado

† **Kansas**—BA 11/9—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., development of West Cave, Atchison, ENG-23-028-56-31. $700,000. CD 10/13.

† **Mont., Fort Harrison**—FIRE SPRINKLER—BA 12/6—Veterans Admin., Munitions Bldg., Wash., D. C., automatic fire sprinkler sys. at Veterans Admin. Center.

▲† **Texas**—BA About 11/15—U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Turtle Creek Pressure Sewer, Part V, Dallas, Floodway, Trinity River, CIVENG-41-44-3-56-9. CD 6/9/44.

BUILDINGS—BA

Tex., San Antonio—SCHOOLS—BA 11/3—Edgewood Independent School Dist., 525 Cupples Rd., No. 1 Elementary School, $450,000; No. 2 Elementary School, $350,000. Plans deposit $25 each. Paul G. Silber Co., 1919½ Cincinnati St., archt. CD 5/16.

Mont., Billings—CHURCH—BA 11/8—First Congregational Church, 310 N. 27 St., brick church sanctuary. $350,000. Orr Pickering & Assoc., Fratt Bldg., archts. Bids 8/2 rejected. CD 7/28.

Wyo., Lander—DORMITORIES—BA 11/8—State Bd. Charities & Reform, Cheyenne, 2 brick dormitories, Wyoming Training School. $375,000. CD 9/8.

Mo., Wardell—SCHOOL—BA 11/10—Bd. Educ., Reorganized School Dist. 6, Pemiscot Co., 1 story elementary school, 1 story Junior High School. Plans deposit $25. Pleas E. Hyatt, 215 S. Main St., Kennett, archt.

Tex., Kilgore — ADMINISTRATION and LIBRARY — BA 12/6—Kilgore College, c/o Dr. Bruce Stark, pres., Kilgore, 2 story brick, tile administration and library bldg. $340,000. Plans deposit $25. Preston M. Geren, 1607 Fort Worth Natl. Bldg., Fort Worth, archts. CD 4/25.

▲ **Tex., Houston**—HIGH SCHOOL—BA 11/10—Houston Independent School Dist., 1300 Capitol St., Kashmere Gardens Junior High School. $2,346,000. Extended date. CD 9/21.

▲ **Tex., Irving**—SCHOOLS—BA 11/14—Irving Independent School Dist., Irving, Junior High School, $575,000; Elementary School No. 1, $350,000; Elementary School No. 2, $350,000. Plans deposit $25 each. Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, archt. CD 9/30.

HEAVY CONSTRUCTION—LB & CA

Commonwealth Electric Co., 417 Broadway, St. Paul, Minn. LB $123,885. (3 bidders) constr. new ornamental lights on University Ave. between Lexington Parkway and Vandalia St., 216 posts, ST. PAUL, MINN. City, L. E. Kinvig, city purch. agt., 253 City Hall, St. Paul, Minn. Bids Oct. 18. CD 11/30.

▲† **Weitz Co., Inc., & J. D. Armstrong Co., Inc.**, 406 Fleming Bldg., Des Moines, Iowa, LB $2,215,204. Stage III, earth fill dam, concrete spillway, Coralville Reservoir, Iowa River, Inv. 11-117-56-7, IOWA. U. S. Eng., Clock Tower Bldg., Rock Island, Ill. Bids Oct. 18. CD 9/21.

Chicago Bridge & Iron Co., 332 S. Michigan Ave., Chicago, Ill. CA $92,200. elevated steel water tank (Subcontract No. WS 14), WELDON SPRINGS, MO. Fruin-Colnon Contg. Co. & Utah Constr. Co., joint venturers, St. Louis Area Proj. Contr. AT (40-1) 1966, P.O. Box 522, St. Charles, Mo. Bids Oct. 7. CD 12/29, under CA, Public Buildings.

† **Driver Contg. Co.**, 406 Cotton Exchange Bldg., Memphis, Tenn., CA, $212,040. levee, White River Drainage Dist., Phillips and Desha Counties, Item WR-L-58, above Lambrook, Phillips and Monroe Counties, CIVENG-40-041-56-36, ARKANSAS. U. S. Eng., P.O. Box 97, Memphis 1, Tenn. Bids Oct. 5. CD 9/19.

† **Hicks Constr. Co.**, Riverton, Wyo., CA $49,513, furnish, place buried bentontie membrane lining for Angostura Main Canal, constr. open and closed drains, Missouri River Basin Proj., Cheyenne Div., Spec. 600C-174, SOUTH DAKOTA. Bureau Reclamation, Dpt. Interior, Hot Springs, S. D. Bids Sept. 22, awarded Oct. 7. CD 9/8.

† **Bushman Constr. Co.**, Box 107, St. Joseph, Mo. CA $959,182, est. $859,664, constr. Kirwin Main Canal Sta. 0 plus 08.75 to 706 plus 0.140 and Kirwin lateral system and drains, Solomon Division, Schedules 2, 3 and 4 and 5, Missouri River Basin Proj., Spec. DC 4480, KANSAS. Bureau Reclamation, Dpt. Interior, Kirwin, Kan. Bids Sept. 15, awarded Oct. 10. CD 9/20.

† **Bushman Constr. Co.**, 5 and Felix Sts., St. Joseph, Mo. LB $926,070, est. $934,203. earthwork, structures for Courtland Canal, Sta. 2003 plus 90.2 to 2472 plus 48 and wasteway laterals and drains, Missouri River Basin Proj., Spec. DC 4501, KANSAS. Bureau Reclamation, Dpt. Interior, Superior, Neb. Bids Oct. 6. CD 8/24.

Boeing Airplane Co., Plant No. II, Personnel Bldg., Wichita, Kan., rejected bids Oct. 4, underground fire water lines, WICHITA, KAN. Est. $228,765. CD 9/23.

† **Mantooth Constr. Co.**, Purcell, Okla., LB, $128,827, est. $130,000 (6 bidders) 3 flood retarding structures at Barnitz Creek, Custer Co., Inv. 7-56, OKLAHOMA. Soil Conservation Service, Agricultural Center Bldg., Farm Rd., Stillwater, Okla. Bids Oct. 17. CD 10/4.

Santa Rosa Telephone Co-operative, 1405 N. Main St., Vernon, Tex. Own Forces. $775,000, 25 mi. rural pole telephone lines, at Vernon, Wilbarger Co., TEXAS. Joe E. Ward, 1608 A Monroe St., Wichita Falls, Tex., engr.

Trotti & Thomson, Inc., 390 S. 4 St., Beaumont, Tex. LB $226,315, county airport imprvs., BEAUMONT, TEX. Jefferson Co., Court House, Beaumont, Tex. Bids Oct. 9. CD 4/1.

▲ **H. B. Zachry Constr. Div.**, Box 2570, San Antonio, Tex. CA $6,700,000, est. $6,900,000. Wesley E. Seale Dam, near Mathis, on Nueces River, CORPUS CHRISTI, TEX. Lower Nueces Water Supply Dist., c/o V. Jaeggli, mgr., 211 Weber Bldg., Corpus Christi, Tex. Bids Oct. 11. CD 10/13, under LB.

† **F & C Engineering Co.**, Box 2426, Houston, Tex., LB $327,086 Prop. 1, firing-in-butt, parking apron, Laughlin Air Force Base, ENG-41-243-56-9, DEL RIO, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Oct. 13. CD 9/14.

Texas Bitulithic Co., N.W. 5 St., Fort Worth, Tex. LB $225,994, est. $246,000, const. Beach St. exten., Unit 1, 1½ in. H.M. A.C. with 3½ in. base, 10 in. flexible base, FORT WORTH, TEX. City, Dr. Jack Garrison, mayor, City Hall, Fort Worth, Tex. Bids Oct. 13. CD 10/4.

Ernest Loyd, 612½ W. 6 St., Fort Worth, Tex., LB $213,727, est. $243,000, rein.-con. paving Rosedale St., connection from 8th Ave. to W. Vickery, FORT WORTH, TEX. City, Dr. Jack Garrison, mayor, City Hall, Fort Worth, Tex. Bids Oct. 13. CD 10/4.

Geo. A. Fuller Co., Gibraltar Life Bldg., Dallas, Tex., CA, $97,000. some area paving and hard-paved auto parking center, truck center, HOUSTON, TEX. Allied Stores Corp. (Joskes of Texas, subsidiary) 401 Fifth Ave., New York, N. Y. Bids Sept. 30. CD 9/19.

Geo. A. Fuller Co., Gibraltar Life Bldg., Dallas, Tex., CA, $88,600. sanitary-storm sewer lines area HOUSTON, TEX. Allied Stores Corp. (Joskes of Texas, subsidiary) 401 Fifth Ave., New York, N. Y. Bids Sept. 30. CD 9/15.

Geo. A. Fuller Co., Gibraltar Life Bldg., Dallas, Tex., CA, $87,215. site grounds grading, leveling, filling, HOUSTON, TEX. Allied Stores Corp. (Joskes of Texas, subsidiary) 401 Fifth Ave., New York, N. Y. Bids Sept. 30. CD 9/15.

Geo. A. Fuller Co., Gibraltar Life Bldg., Dallas, Tex., CA, $46,000. water sys., HOUSTON, TEX. Allied Stores Corp. (Joskes of Texas, subsidiary) 401 Fifth Ave., New York, N. Y. Bids Sept. 30. CD 9/15.

The Westbury Addition, Sect. 3, Belfort and Chimney Rock Rd., Houston, Tex. Own Forces. $150,000, storm sewers; $175,000, sanitary sewers, outside limits of HOUSTON, TEX. CD 8/31.

† **R. O. Davis, Inc.**, Box 3218, Austin 13, Tex., LB $256,000, addnl. jet fuel storage facilities, Naval Auxiliary Air Station, NOY 86324, KINGSVILLE, TEX. Bureau Yards & Docks, Dpt. Navy, Naval Air Station, Corpus Christi, Tex. Bids Oct. 11. CD 9/29.

City Public Service Bd., 201 N. St. Mary's St., San Antonio, Tex. Own Forces. $175,000. electric distr. lines on south section; $175,000, replacing some electric underground cables distr. lines in downtown SAN ANTONIO, TEX. CD 1/3.

▲† **Miller & Smith & O'Hara, Inc.**, Box 6007, Sta. B, Albuquerque, N. M. CA $1,754,084. Albuquerque Unit Phase III, Rio Grande Floodway, CIVENG 29-005-56-5, NEW MEXICO. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Sept. 30. CD 9/14.

† **Frank Tatsch**, 1150 N. Main St., Silver City, N. M. CA $170,885. addn. to high speed test track, AF 29 (600)-722, Holloman Air Force Base, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M.

BUILDINGS—LB & CA

Bd. Educ., Sarah Anzeic, clk., Biwabik, Minn., rejected bids Oct. 12. elementary school, BIWABIK, MINN. LB $566,573. Will re-advertise. CD 10/18, under LB.

Watson Constr. Co., Baker Bldg., Minneapolis, Minn. CA $768,000. general contract first unit Northeast Junior High School between 29 and 30 Aves. and between Hayes and Marshall Sts. N.E., MINNEAPOLIS, MINN. Bd. Educ., G. R. Arneson, city purch. agt., 301 City Hall, Minneapolis, Minn. CD 9/13, under LB.

▲ **Lovering Constr. Co.**, 59 W. Kellogg Blvd., and **J. S. Sweitzer & Son**, 739 Pillsbury St., St. Paul, Minn. CA $1,197,438. (joint bidders) general contract 1 story, 200,000 sq. ft. electronics PLANT, ST. PAUL, MINN. Engineering Research Associates of St. Paul, Div. of Remington Rand, W. C. Norris, vice pres., 543 S. Peter St., St. Paul, Minn. CD 10/18, under LB.

R. K. and A. Jones Constr. Co., 7129 Olive Blvd., University City 24, Mo. CA Est. $350,000. brick, concrete steel automobile SERVICE, GARAGE and SALES BLDG., on 200x207 ft. site, 1201 S. Florissant Rd., FERGUSON (ST. LOUIS 21 P.O.), MO. B.P.B. Pontiac, Inc., c/o 7129 Olive Blvd., University City 24, Mo.

Behlman Builders, 1348 St. Louis Ave., Florissant, Mo. Owner Builds. $730,365. seventy-three 1 story, 25x36 ft. brick DWELLINGS, 11x25 ft. GARAGES, in Northfield Gardens No. 2 subdivision, ST. LOUIS COUNTY, MO.

Cooper-Bessemer Corp., Grove City, Pa., $294,690 on 2,820 h.p. engine; LB $312,629 on 3,000 h.p. engine, for POWER PLANT changes, extens. and generating equip., WAYNE, NEB. City, Wayne, Neb. Bids Oct. 11, CD 9/8;
Worthington Corp., Walbridge Bldg., Buffalo, N. Y. LB $287,997 on 2,900 h.p. engine, LB $260,623 on 2,670 h.p. engine (Wayne, Neb.);
Nordberg Mfg. Co., 3073 S. Chase St., Milwaukee, Wis., LB $245,800 on 2,400 hp. engine (Wayne, Neb.).

M. C. Andrews, Jr., 320 S.E. 9 St., Grand Prairie, Tex., Day Labor, $585,000. SHOPPING CENTER, ARLINGTON, TEX. CD 10/14.

▲ **M. C. Andrews Constr. Co.**, 320 S.E. 9 St., Grand Prairie, Tex., CA, $348,850. 20 DWELLINGS; CA $369,119, 32 DWELLINGS; CA $372,015, 30 DWELLINGS, ARLINGTON, TEX. M. C. Andrews, Jr., 320 S.E. 9 St., Grand Prairie, Tex. Grand total $1,089,984. CD 7/28.

Sportsmen's Paradise Corp., c/o Jess Sweeten, Athens, Tex. Day Labor. $350,000. 40 or more cedar CABINS, appurtenances, ATHENS, TEX. CD 8/22.

Guido Brothers Constr. Co., 627 W. Martin St., San Antonio, Tex., LB $447,743, Bid "A", COURT HOUSE, CUERO, TEX. DeWitt Co., Court House, Cuero, Tex. Ralph H. Cameron, 1519 Transit Tower, San Antonio, Tex., archt. Willard Simpson, 945 Milam Bldg., San Antonio, Tex., engr. Bids Oct. 11. CD 10/12/54.

G & H Land Co., Box 11131, Fort Worth, Tex. Own Forces $365,000, 20 DWELLINGS, FORT WORTH, TEX. CD 8/18.

Spartan Constr. Co., Box 14397, Houston, Tex., LB $612,085. two SCHOOLS, incl. Cloverleif Junior High and elementary in Fidelity Manor subdivision, GALENA PARK, TEX. Galena Park Independent School Dist., Galena Park, Tex. Bids Oct. 10. CD 9/22.

R. E. Baldwin & Assocs., 1011 Howard Lane, Houston, Tex. Owner Builds. $365,000 (E) 25 DWELLINGS; $377,120 (F) 18 DWELLINGS, HOUSTON, TEX. CD 7/13.

Barnes & Coffee Constr. Co., 2310 N. Wayside St., Houston, Tex. Own Forces. $346,500, 23 DWELLINGS; $350,000, 35 DWELLINGS, 4 mi. southeast of HOUSTON, TEX. CD 8/24.

▲ **Bechtel Corp.**, 220 Bush St., San Francisco, Calif., CA, $13,500,000. chemical mfg. PLANT expansion, HOUSTON, TEX. Petro-Tex Chemical Corp., First Natl. Bank Bldg., Houston, Tex.

▲ **W. S. Bellows Constr. Co.**, 716 N. Everton St., Houston, Tex., CA, $1,014,000, 4 story STORE addn. and PENTHOUSE, HOUSTON, TEX. Foley's, 1110 Main St., Houston, Tex. Bids Oct. 11. CD 9/8.

Cambridge Village, c/o Alex Susholtz, 706 Garden Oaks St., Houston, Tex. Own Forces. $378,750, Sect. 2, 30 DWELLINGS; $371,500, 24 DWELLINGS, HOUSTON, TEX. CD 8/1.

Canterbury & Brown, Home Builders, 7026 Lawndale St., Houston, Tex. CA $350,000, Sect. 1, 35 DWELLINGS; CA $347,500, 30 DWELLINGS, HOUSTON, TEX. Valentine Land Co. & John B. Brown, Builder, 7026 Lawndale St., Houston, Tex. CD 8/29.

Carla Development Co., 4143 Bellfontane St., Houston, Tex., Own Forces, $484,400. 22 DWELLINGS; $369,910, 18 DWELLINGS, HOUSTON, TEX. CD 8/1.

▲ **Geo. A. Fuller Co.**, Gibraltar Life Bldg., Dallas, Tex., CA, $1,214,000. WAREHOUSE, HOUSTON, TEX. Allied Stores Corp. (Joskes of Texas, subsidiary) 401 Fifth Ave., New York, N. Y. Bids Sept. 30. CD 9/15.

Harold P. Hill Constr. Co., 8608 Park Terrace Blvd., Houston, Tex., CA $363,185, 32 DWELLINGS, HOUSTON, TEX. CD 8/11.

Harold P. Hill Constr. Co., 8608 Park Terrace Blvd., Houston, Tex., CA $368,175, 24 DWELLINGS; CA $356,116, 16 DWELLINGS, HOUSTON, TEX. Carmac Co., 8608 Park Terrace Blvd., Houston, Tex. CD 8/26.

John Kress and Claude Kress Williams, 3014 Lake St., Houston, Tex. Own Forces. $385,100, 42 APARTMENT UNITS, HOUSTON, TEX. CD 8/16.

J. E. Lyon, The Builder, Prudential Bldg., Houston, Tex., CA, $350,750 (F) 15 DWELLINGS; CA $366,600 (G) 25 DWELLINGS, HOUSTON, TEX. J. E. Lyon Development Co., Prudential Bldg., Houston, Tex. CD 7/19.

▲ **Meyer-Hubert Development Co.**, 5300 Aspen St., Houston, Tex., CA $387,750, 16 DWELLINGS; CA $347,500, 14 DWELLINGS; CA $371,000, 18 DWELLINGS, near Bellaire, HOUSTON, TEX. Grand total $1,106,250. Frank & Joe Meyer and Krist Hubert, 5300 Aspen St., Houston, Tex. CD 8/22.

John B. Neal, 7730 Magnolia St., Houston, Tex. Own Forces. $365,000, 30 DWELLINGS, HOUSTON, TEX. CD 8/3.

Larry T. Nierth, Contractor & Assocs., 4507 Richmond Rd., Houston, Tex., CA $367,500, 26 DWELLINGS, HOUSTON, TEX. Larry T. Nierth, 4507 Richmond Rd., Houston, Tex. CD 8/4.

Prichard & Tresch Building Co., 802 Forest Oaks St., Houston, Tex. Owner Builds. $375,000, 25 DWELLINGS; $352,185, 21 DWELLINGS, HOUSTON, TEX. CD 8/26.

Sims Bayou Constr. Co., Inc., 6502 Ledbetter St., Houston, Tex. Own Forces. $350,000, 28 DWELLINGS, HOUSTON, TEX. CD 8/11.

▲ **Westmoreland Development Co.**, c/o David Bentliff, M. Esperson Bldg., Houston, Tex. Own Forces.

(Continued on page 97)

In Lansing, Michigan* FASTER Big Pipe Gets Better Joints

TYLOX Rubber Pipe Joints

TYLOX CAN make short work of ...ting even gigan-... of 84-inch. After ...ubricate... shown, merely easing the pipe home to line and grade ...bes the joint. Sealing by compression—not adhesion—T...X compensates line angularities, is not affected by trenc...ter, and can be backfilled immediately.

Lansing, Michigan*

MAKES SUBSTANTIAL SAVINGS IN CONSTRUCTION TIME AND COST BY COUPLING LARGE WATER LINE WITH Fast-working TYLOX Rubber JOINTS

The project was an intake water line for cooling light plant generators. Plans called for *big* pipe (84 inches in diameter); *tight,* non-deteriorating joints; and construction *within* the budget.

Tylox met all counts efficiently — plus giving a bonus in reduced construction time and cost. TYLOX is the *one* pipe joint that doesn't have to be "dug up" for repairs . . . that stays leak-proof *for the life of the line* . . . that enables construction men to lay pipe with cost-saving speed.

Write for illustrated data and more case histories on TYLOX. See *how* this joint promotes economical construction of sewerage, drainage and non-pressure water lines, *plus* assuring joints that will outlast the pipe itself. Read the facts, and specify TYLOX on *your* next pipe project.

* PROJECT: For the Board of Water and Light, Lansing, Michigan.
PIPE: Reinforced Concrete, furnished by Lamar Pipe and Tile Company, Saginaw, Michigan, a division of American-Marietta Company, Chicago, Ill.
ENGINEERS: Burns and Roe, Inc., New York, N. Y.
CONTRACTORS: Reniger Construction Company, Lansing, Michigan.

1912

HAMILTON KENT MANUFACTURING COMPANY
KENT, OHIO
427 West Grant St. Orchard 3-9555

(Continued from page 95)

$348,150, (C) 24 DWELLINGS; $351,000, (D) 19 DWELLINGS; $391,145 (E) 33 DWELLINGS, HOUSTON, TEX. Grand total $1,090,295. CD 4/4.

▲ **Bill Williams Constr. Co.**, 2310 N. Wayside St., Houston, Tex., Owner Builds, $480,000 (A) 48 DWELLINGS; $345,000 (B) 32 DWELLINGS; (C) 40 DWELLINGS, outside limits of HOUSTON, TEX. Grand total $1,216,600. CD 8/24.

Chamber Constr. Co., Inc., 1954 Temple Dr., Houston, Tex., LB $355,944, est. $350,000. two Elementary SCHOOL UNITS, East Side and West Side, LAMARQUE, TEX. LaMarque Independent School Dis., LaMarque. Bids Oct. 10. CD 9/21.

Carmody & Bostick, Mesquite, Tex. Owner Builds. $382,175. 35 DWELLINGS, MESQUITE, TEX. CD 5/5.

C. O. Beeler & Assocs., 4715 Calhoun St., Houston, Tex. Owner Builds. $356,910, 30 DWELLINGS; $375,110, 35 DWELLINGS, PASADENA, TEX. CD 7/12.

Willett Wilson, Texas Ave. Bldg., Houston, Tex. Own Forces. $346,100, 25 DWELLINGS, PORT LAVACA, TEX. CD 8/9.

Lindsay Embrey, W. T. Troth & Assocs., New Belt Line Rd., Richardson, Tex. Own Forces. $370,000, 30 DWELLINGS; $347,715, 26 DWELLINGS, RICHARDSON, TEX. C. L. Moon & Assocs., 130 Casa Linda Plaza, Dallas, engrs.-archts. CD 8/4.

Mark Rice & Assocs., 207 Pauline Dr., Richardson, Tex. CA $379,610, 35 DWELLINGS; CA $357,182, 24 DWELLINGS, RICHARDSON, TEX. Mark Rice, 207 Pauline Dr., Richardson, Tex. CD 9/1.

Wm. L. Wynnes, San Angelo, Tex. Own Forces. $363,175, 33 DWELLINGS, SAN ANGELO, TEX. CD 8/18.

N. O. Simmons Building Co., Box 5201, Beacon Hill Station, San Antonio, Tex., Day Labor, $381,125, 33 DWELLINGS; $390,600. 41 DWELLINGS, SAN ANTONIO, TEX. CD 8/1.

G. W. Mitchell, 2002 N. St. Marys St., San Antonio, Tex. CA $841,150, No. 1 and No. 2 Girls DORMITORIES, SAN MARCOS, TEX. Southwest Texas State Teachers College, San Marcos, Tex., and Bd. Regents, State Teachers College of Texas, Tribune Bldg., Austin, Tex. Bids Oct. 5. CD 10/13, under LB.

E. J. Dysart, Dave Lack & Assocs., Victoria, Tex. Own Forces. $358,776, 35 DWELLINGS; $396,615, 43 DWELLINGS, VICTORIA, TEX. CD 8/1.

Empire Constr. Co., 190 West Girard St., Englewood Colo., LB, $466,800, est. $365,000. 2 story, 27,000 sq. ft. new materials, LABORATORY, DENVER, COLO. State Hy. Dpt., 518 State Office Bldg., Denver, Colo. Bids Oct. 11. CD 9/28.

Craftsmen Constr. Co., 1337 E. 18 St., Denver, Colo., CA, $639,568, general contract ACADEMIC BLDG., and GYMNASIUM, DURANGO, COLO. State, Fort Lewis A & M College, Hesperus, Durango, Colo. Bids Oct. 7, awarded Oct. 10. CD 9/16.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 17 California

† **Calif., Sacramento**—PARKING APRONS—BA 11/10—U. S. Eng., 1209 B St., operational parking aprons, McClellan Air Force Base, ENG-04-167-56-16. $748,000. CD 6/6/52.

Calif., Los Angeles—BA 12/9—City, City Hall, sewers in Sharp Ave. and Van Nuys Blvd. Sewer District, $750,000. L. A. Pardee, engr. CD 4/8.

BUILDINGS—BA

Idaho, Pocatello—TRADE and INDUSTRIAL EDUCATION—BA 11/3—State Commissioner P. Wks., Capitol Bldg., Boise, trade and industrial education bldg. Idaho State College. $425,000. Plans deposit $50. Hunter-Brower & Assocs., Pocatello, archts. CD 4/27.

▲ **Wash., Yakima**—SCHOOL—BA 11/8—School District No. 7, 188,000 sq. ft., rein.-con. Junior-Senior High School. $1,250,000. Plans deposit $50. J. W. Maloney & J. H. Whitney, Larson Bldg., archt. CD 11/29.

Wash., Cowiche—SCHOOL—BA 11/15—Highland School Dist. 203, Tieton, 36,900 sq. ft. masonry elementary school, $420,000. Plans deposit $25. J. S. Villesvik, 109 N. 3 St., Yakima, archt. CD 9/27, under Wash., Tieton.

HEAVY CONSTRUCTION—LB & CA

† **E. V. Lane Corp. & Gunther & Shirley Corp.**, Box 417, Palo Alto, Calif., LB, $679,063. completing Palisades Power Plant and Switchyards, Palisades Proj., Spec. DC 4464, IDAHO., Bureau Reclamation, Dpt. Interior, Palisades, Idaho. Bids Oct. 18. CD 8/26.

NEVADA—Dpt. Hys., State Office Bldg., Carson City, Nev.—**Morrison-Knudsen Co., Inc.**, 900 W. 15 N St., Salt Lake City, Utah, CA $346,244, constr. portion State Hy. Sys. from 12 mi. west to 5 mi. west of Caliente, FAS Rte. 544, Control Sect. LI-04, Proj. No. S-544 (8), State Hy. Contr. 938, Lincoln Co.;

Nev.—**Silver State Constr. Co.**, 859 S. Maine St., Fallon, Nev., CA $309,430, constr. portion State Hy. Sys. from junction U. S. Rte. 6 near Currant to Duckwater Indian Reservation, Rte. Sect. FAS 676, Control Sect. NY-20, Proj. No. S-676 (1), State Hy. Contr. No. 937, Nye Co. Bids Oct. 13. CD 10/4.

† **Osberg Constr. Co.**, 1132 N. 128 St., Seattle, Wash., LB, $464,435, est. $391,900. earthwork, structures for Badger East and West Laterals, and Highlands feeder canal and laterals, Yakima Proj., Kennewick Div., Spec. DC 4517, WASHINGTON. Bureau Reclamation, Dpt. Interior, Kennewick, Wash. Bids Oct. 13. CD 9/7.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles,

V. R. Dennis Constr. Co., Box 3158, Hillcrest Sta., San Diego, Calif., LB, $410,913. rein.-con., steel bridge, grading, surf. frontage roads, La Mesa, San Diego Co. Bids Oct. 14. CD 9/30.

† **J. G. Watts Constr. Co.**, 4538 S.W. Macadam Ave., Portland, Ore., LB, $423,322 (2 bidders) three 1 story concrete, wood, steel headquarters bldgs., 13 prefab. metal buildings, concrete, masonry pumphouse, Klamath Falls, Ore. and Tulelake, Calif. for Bureau Reclamation, Specs. 44484, CALIFORNIA and OREGON. P. Wks. Officer, Thirteenth Naval Dist., 1611 W. Wheeler St., Seattle, Wash. Bids Oct. 13. CD 9/27.

▲ **Peter Kiewit & Son**, 442 Post St., San Francisco, Calif. LB $1,366,830 (5 bidders) water tunnel, excavation in conjunction with Sunset and Crystal Springs water lines, Hillsborough, SAN FRANCISCO, CALIF. P. Utilities Comn., City Hall, San Francisco, Calif. Bids Oct. 17. CD 9/28.

BUILDINGS—LB & CA

▲ **Newland Constr. Co.**, Everett, Wash., CA Total est. $1,000,000 general contract 6 story OFFICE and STORE addn., EVERETT, WASH. Medical-Dental Bldg. Co., Medical-Dental Bldg., Everett, Wash. CD 3/7;
Westinghouse Electric Co., White-Henry-Stuart Bldg., Seattle 1, Wash., CA, elevators and escalators (Everett, Wash.).

Washington Brick & Lime Co., E. 7621 Sprague St., Spokane, Wash. Day Labor, $400,000. PLANT, SPOKANE, WASH. CD 5/10.

▲ **Smith-Phillips Co.**, 7402 Southwest Macadam St., Portland, Ore., LB, $2,135,597. (12 bidders) HIGH SCHOOL, FAIRVIEW, ORE. Multnomah School Dist. No. 7, 5 and Main Sts., Fairview, Ore. Bids Oct. 18. CD 9/26.

▲ **Donald M. Drake Co.**, 1600 N.W. Savier St., Portland, Ore. CA $2,960,000. 2 story MEDICAL-DENTAL CENTER addn., remodel theater into RAMP GARAGE, PORTLAND, ORE. Ben Dierks, Grants Pass, Ore. Sundeleaf, Hagestad & Peace, Portland Trust Bldg., Portland, Ore., archts. CD 7/1/54.

H. Halvorson, Inc., Third and Battery Sts., Seattle, Wash., CA Est. $344,000. 120x130 ft. masonry FOOD MARKET, 6900 E. Green Lake Way, SEATTLE, WASH. Albertson's, Inc., Box 1399, Boise, Idaho. CD 6/2.

▲ **Exhibit Homes**, 8900 W. Olympic Blvd., Beverly Hills, Calif., Owner Builds, $1,875,000. 151 frame, stucco DWELLINGS, Tract 2330, BUENA PARK, CALIF. Daniel Dworsky, 451 S. Robertson Blvd., Beverly Hills, Calif., archt.

Christensen & Lyons, 3454 Harlan St., Oakland, Calif., LB, $116,080. 100 ft. PLANT addns., EMERYVILLE, CALIF. John Breuner, c/o Alben Froberg, archt., 3454 Harlan St., Oakland, Calif. Bids Sept. 29. CD 9/30.

▲ **Indenco, Inc.**, 960 98 Ave., Oakland, Calif., LB, $1,520,000. COUNTY OFFICE BLDG., HAYWARD, CALIF. Alameda Co., Court House, Oakland, Calif. Bids Oct. 18. CD 9/26.

Wm. C. Crowell Co., 170 California St., Pasadena, Calif., LB, $575,000, est. $530,000. ADMINISTRATION BLDG. addn., PASADENA, CALIF. Bd. Educ., 351 S. Hudson Ave., Pasadena, Calif. Bids Oct. 14. CD 9/30.

▲ **Beverly Development Co.**, 8549 Wilshire Blvd., Beverly Hills, Calif., Owner Builds, $1,950,800. 138 frame, stucco DWELLINGS, Mayland and E. Donald Aves., etc., PUENTE, CALIF. Martin Stern, 8325 Wilshire Blvd., Beverly Hills, archt.

Bollenbacher & Kelton, Route 1, Box 476, San Diego, Calif., Owner Builds, $895,000. 90 frame, stucco DWELLINGS, Allied Gardens Tract No. 6, SAN DIEGO, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 1, 2, 29 British Columbia
STREETS AND ROADS
November 1 British Columbia November 2 Ontario

BUILDINGS—BA

▲ **Ont., Toronto**—OFFICE—BA 11/3—Traders Finance Corp. Ltd., 44 King St. W., 6 story, bsmnt., 68x218 ft. rein.-con., structural steel, brick office bldg. $3,000,000. Marani & Morris, 1250 Bay St., archts. Wallace, Carruthers & Assocs. Ltd., 36 Isabella St., engrs. CD 9/8.

Que., Chicoutimi—POWERHOUSE—BA 11/4—Montreal Eng. Co. Ltd., engrs., 244 St. James St. W., Montreal, power house at smelter and power development for Eastern Smelting & Refining Co. Ltd., 135 Wellington St. W., Toronto, Ont., Over $750,000. CD 8/22.

Ont., Barriefield—DWELLINGS—BA 11/8—Central Mortgage & Housing Corp., 40 Eglinton Ave. E., Toronto, 52 single family dwellings, $400,000. Plans deposit $100. H. I. Stricker, c/o owner, regional constr. engr.

▲ **Ont., Petawawa**—ADMINISTRATION, etc.—BA 11/8—Defence Constr. Ltd., 56 Lyon St., Ottawa, 3 administration bldgs., Q. M. and Technical Stores Bldg., Junior Ranks Club, Army Club, $1,250,000. Plans deposit $100. CD 12/15.

Ont., Sarnia—HIGH SCHOOL—BA 11/17—Bd. of Educ., 2 story, bsmnt., 220x250 ft., rein.-con., concrete block high school, Indian Rd. and Michigan Ave. $850,000. Plans deposit $25. John B. Parkin Assocs. 1500 Don Mills Rd. Postal Station "Y" Toronto, Zone 6, archts. CD 4/1.

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria,

Dawson, Wade & Co., Ltd., 775 Clark Dr., Vancouver, B. C., LB $450,554, Proj. 645, Nine Mile Creek-Boothroyd Flats Sect., Trans-Canada Hy., Yale District; LB $581,333 6.54 mi. Okanagan Hy., Lot 4244, Deep Creek Section, Contract 649. Bids Sept. 30. CD 9/15.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,
Wallace A. Mackey Ltd., 50 Church St., Weston, Ont., LB $537,606 (5 bidders) Contract 55-220, grading, culverts, gran. base 10.45 mi. Hy. No. 17 from White River westerly, White River Bids Oct. 12. CD 9/26.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,
Ont.—**Keystone Contractors Ltd.**, Box 84, Windsor, Ont., LB $465,801 (4 bidders) Contr. 55-213, grading, culverts along 3.5 mi. Hy. 401, from west end of Walker Rd. ramp to Hy. No. 3, Chatham;
Ont.—**Miller Paving Ltd.**, 56 Blake St., Toronto, Ont., LB $464,992 (8 bidders) Contract 55-197 gran. base, hot mix paving 3.4 mi. Hy. 401 from Neilson's Rd. to Hy. No. 2, Toronto. CD 4/27/44.

ONTARIO—Dpt. of Hys., Parliament Bldgs., Toronto.
Wallace A. Mackey Ltd., 50 Church St., Weston, Ont., CA $537,606. Contract 55-220, grading, culverts, gran. base, along 10.45 mi. Hy. No. 17 (Trans-Canada Hy.) from White River westerly, Bids Oct. 12, awarded Oct. 14. CD 10/19, under LB.

Marino Constr. Co., 251 Raleigh Ave., Toronto, Ont., CA $116,738. 12,835 lin. ft. 6- to 12-in. water mains, with 290 service connections, CA $97,139, 14,100 ft. 12 in. water mains, 65 service connections in Yonge St., MAPLE, ONT. Vaughn Twp., Municipal Bldg., Maple, Ont. Grand total $436,638; Awarded Oct. 11; CD 8/3;
Ruscica Bros. Co. Ltd., 41 Industrial St., Toronto, Ont., CA $131,076. 34,210 lin. ft. 6- to 12-in. water mains, 332 service connections in various locations (Maple, Ont.);
Carroll-Sharp Constr. Ltd., 29 Colborne St., Toronto, Ont., CA $91,685. 21,065 lin. ft. 6- to 12-in. water mains, 274 service connections in various streets, (Maple, Ont.).

Kilmer Van Nostrand Ltd., 315 Eglinton Ave., Toronto, Ont., LB $105,510. Contract 42-55, pavement wid'n. on various streets; LB $118,975, Contract 41-55 pavement wid'n. on various streets, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont., CD 7/1;
Dufferin Constr. Co. Ltd., 2700 Dufferin St., Toronto, Ont., LB $183,116, Contr. 43-55, pavement wid'n. Eglinton Ave. (Toronto, Ont.).

J. P. Albert Normand, Inc., L'Islet Village, Que., LB $230,466, wharf reconstr., GROSSE ILE, QUE. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Oct. 12. CD 9/28.

BUILDINGS—LB & CA

Ellis-Don Ltd., 109 8 Ave. E., Calgary, Alta., CA $451,800. RCE OFFICES, STORES, WORKSHOP and lumber and pipe storage rack, Currie Barracks, CALGARY, ALTA. Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids Sept. 28. CD 9/14.

▲ **The Foundation Co. of Canada Ltd.**, 1302 11 Ave. W., Calgary, Alta., CA $1,000,000. 3 story, steel, rein.-con. OFFICE, 7 Ave. and 5 St., CALGARY, ALTA. Triad Oil Co. Ltd., Calgary, Alta. Bids Sept. 15, awarded Oct. 7. CD 9/7.

Interprovincial Constr. Co. Ltd., 736 Granville St. Vancouver, B. C., CA $600,000. 4 story, 57-room rein.-con. HOTEL, NEW WESTMINSTER, B. C. Simon Fraser Hotel Ltd., c/o 1401 Vancouver Block, Vancouver, B. C. A. W. Gray, 1401 Vancouver Block, Vancouver, B. C., archt. Awarded Oct. 13.

Cloverdale Constr. Co. Ltd., Cloverdale, B. C., LB $425,964, frame, glulam beam HIGH SCHOOL, WESTVIEW, B. C. School Dist. N. 47, Powell River, B. C. Bids Oct. 5. CD 9/15.

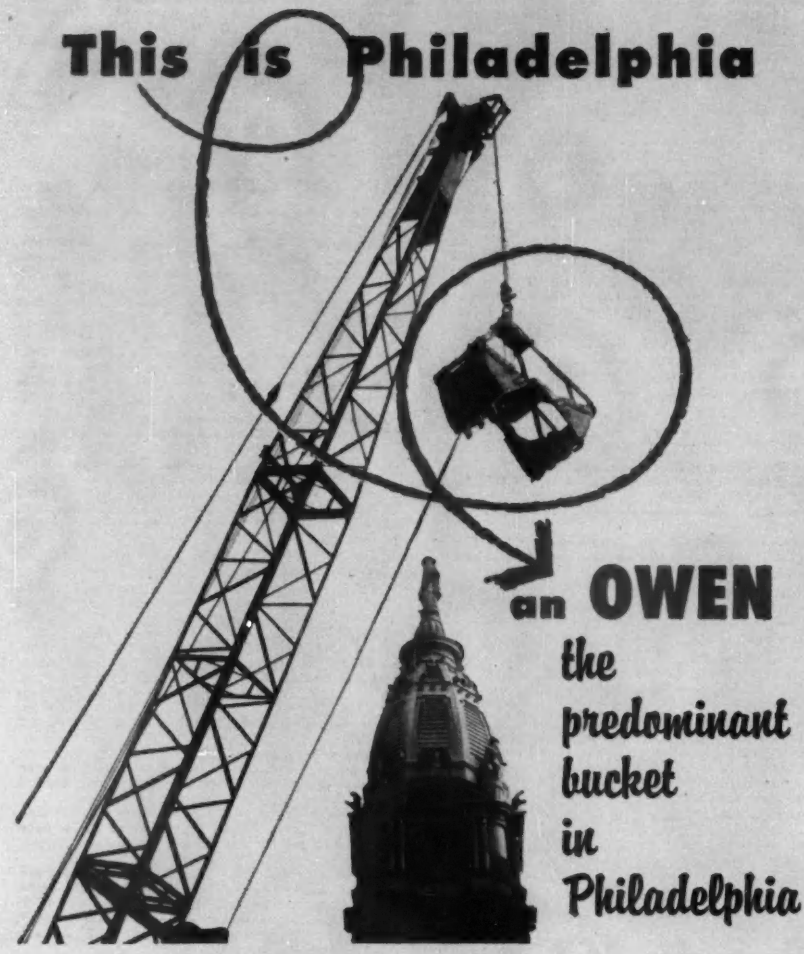
R. E. Stewart Constr. Corp., 862 Wellington St. S., Sherbrooke, Que., CA, $401,000 (6 bidders) 180-man BARRACK BLOCK, Canadian Army's Camp Gagetown, FREDERICTON, N. B. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Sept. 22, awarded Oct. 11. CD 9/6.

James Kemp Constr. Ltd., 121 Vansitmart St., Box 52, Station "B", Hamilton, Ont., CA, $566,426 250-man BARRACKS, Canadian Army's Barriefield Camp, BARRIEFIELD, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Sept. 13, awarded Oct. 7. CD 8/23.

▲ **B. Perini & Sons (Canada) Ltd.**, 49 Jackes Ave., Toronto, Ont., CA $7,300,000. ORE MILL, part of uranium mining development, BLIND RIVER, ONT. Consolidated Denison Mines Ltd., Suite 305, Royal Bank Bldg., 10 King St. E., Toronto, Ont. Awarded Oct. 14. CD 6/28.

M. Sullivan & Son Ltd., 234 Elgin St., Arnprior, Ont., CA Est. $600,000. 2 story, 120x360 ft., structural steel, rein.-con. FINISHING ROOM exten., CORNWALL, ONT. Howard Smith Paper Mills Ltd., 407 McGill

This is Philadelphia



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Yes, in Philadelphia nearly every contractor uses at least one Owen Bucket — some have several — for excavating—trenching—dredging—material handling.

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BRANCHES: NEW YORK, PHILADELPHIA, CHICAGO, BERKELEY, CALIFORNIA, FT. LAUDERDALE, FLORIDA

St., Montreal, Que. Bids Sept. 30, awarded Oct. 11. CD 9/28.

T. A. Andre & Sons Ltd., 580 Brock St., Kingston, Ont., CA, $650,000 (6 bidders) 1 story 61,000 sq. ft. rein.-con. brick DEPARTMENT STORE, KINGSTON, ONT. Simpson-Sears Ltd., 176 Yonge St. Toronto, Ont. F. S. Corley, c/o owner, ch. archt. Awarded Oct. 13. CD 9/26.

Ellis-Don Ltd., Box 852, London, Ont., CA $472,638, two W.O's and Sgts. MESS, Army Camp LONDON, ONT. Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids Oct. 4. CD 9/20.

Hamilton Bridge Div., Bridge & Tank Co. of Canada, Ltd., 231 Bay St. N., Hamilton, Ont., CA, $300,000 4 fuel oil storage tanks at Marine Fuel OIL TERMINAL, MILLHAVEN, ONT. Liquifuels Ltd., 347 Bay St., Toronto, Ont. Awarded Oct. 7. Grand total $500,000, CD 7/15; **Harvey Constr. Co. Ltd.**, R. R. No. 1, Kingston, Ont., CA, $100,000. road to causeway (Millhaven, Ont.); **Toronto Iron Works Ltd.**, 629 Eastern Ave., Toronto, Ont., CA, $100,000. storage tank (Millhaven, Ont.).

George Hardy Ltd., 163 Wicksteed Ave., Toronto, Ont., LB, $720,626 (12 bidders) eight buildings, 2 story, bsmnt., 42x103 ft., 128-suites, APARTMENT project for aged people TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Oct. 7. CD 9/28.

▲ **Deil Constr. Co. Ltd.**, 2461 Bloor St. W., Toronto, Ont., CA, $1,826,000. 5 story, bsmnt., U-shaped, two wings each 55x155 ft., adjoining section 42x55 ft. Don JAIL addn., TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. W., Toronto, Ont. Bids Sept. 27, awarded Oct. 13. CD 10/4, under LB.

Camston Ltd., 2916 Bloor St. W., Toronto, Ont., CA $420,000. 1 story, 240x255 ft., PLANT and 2 story 50x190 ft. OFFICE section, TORONTO, ONT. Canadian Controllers Ltd., 169 Eastern Ave., Toronto, Ont. Crang & Boake, 79 Huntley St., Toronto, Ont., archts. Alex Tobias, 24 Cecil St., Toronto, Ont., engr. Awarded Oct. 12.

Canadian General Electric Co. Ltd., Park Ave. N., Peterborough, Ont., CA, $400,000. supplying, installing 40,000 KVA GENERATOR at smelter and power development, CHICOUTIMI, QUE. Eastern Smelting & Refining Co., Ltd., 137 Wellington St. W., Toronto, Ont. Awarded Oct. 11. CD 8/22.

J. H. Poirier, 1150 de Villeray St., Montreal, Que., Owner Builds. $500,000. 4 story, bsmnt. 75x136 ft. rein.-con. brick, stone trim APARTMENT, Dorchester St., MONTREAL, QUE.

▲ **Decarie Constr. Ltd.**, 1540 Beauregard St., Ville Jacques Cartier, Que., LB, $642,600 (5 bidders) St. Charles Borromee SCHOOL, VILLE JACQUES CARTIER, QUE. La Municpalite Scolaire de la Paroisse de Longueuil, Ville Jacques Cartier, Que. Marc Cinq-Mars, 1980 Sherbrooke St. W., Montreal, archt.; **Desourdy Constr. Ltd.**, 3350 Laurier Blvd., Ville Jacques Cartier, Que., LB $548,700 (5 bidders) Notre Dame de Grace SCHOOL (Ville Jacques Cartier, Que.).

U. S. POSSESSIONS

HEAVY CONSTRUCTION—BA

† **Panama**—BA 11/11—Bureau P. Rds., Dpt. Commerce, 18 and F Sts., N.W. Wash. 25, D.C. Inter-American Hy. Program Proj. 14, constr. 8 concrete bridges between Las Vueltas and Remedios. Plans available only from Highway Auth., Mr. Tomas Guardia, ch. engr., Carretera Interamericana No. 16, via Espana, Panama City, Panama.

† **Panama**—BA 11/18—Bureau P. Rds., Dpt. Commerce, 18 and F Sts., N.W. Wash. 25, D.C., Inter-American Hy. Program Proj. 8 (11) approx. 10 mi. paving between Anton and Penonome. Plans available only from Highway Auth., Mr. Tomas Guardia, ch. engr., Carretera Interamericana No. 16, via Espana, Panama City, Panama.

† **Panama**—BA 11/25—Bureau P. Rds., Dpt. Commerce, 18 and F Sts., N.W. Wash. 25, D.C., Inter-American Hy. Program Proj. 13, approx. 14 mi, grading, drainage, crushed rock base course between David and Concepcion. Plans available only from Highway Auth., Mr. Tomas Guardia, ch. engr., Carretera Interamericana No. 16, via Espana, Panama City, Panama.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Costa Rica**—BA After 11/15—Inter-American Hy. Offices, Bureau P. Rds., Dpt. Commerce, San Jose, Costa Rica and 18th and F Sts., N.W. Wash. 25, D.C.,

Proj. No. 3-A, crushed rock base course, and asph. surf. (road mix) 234 kilometers (145 mi.) of Inter-American Hy. between San Ramon and the Nicaragua Border.

Proj. No. 3-B-constr. 28 concrete, steel bridges between San Ramon and Nicaragua Border.

FOREIGN

HEAVY CONSTRUCTION—BA

Arabia, Saudi — RAILROAD — BA 12/20 — Ministry of Finance & National Economy, Jeddah, Saudi, Arabia, constr. Riyadh-Medina-Jeddah Railroad with its four branch lines. Plans deposit $168. Plans available Saudi Arabian Embassy, 2800 C Woodland Dr. N.W., Wash., D. C., U. S. A.

(Proposal Advertisements see pp. 110 to 112)

UNIT PRICES

Closure of Dalles Dam, Columbia River, Wash-Ore

The full record follows of unit prices bids on The Dalles Dam closure (see ENR 10-6-55, p. 44 for description and suggested method based on model studies).

Guy F. Atkinson, South San Francisco, California, and Ostrander Construction Co., Portland, Oregon, team up again for the low bid of six offers. Their price is $4,319,085, if they take credit for salvageable materials and equipment, and $4,338,085 on an alternate whereby they turn salvage over to the Government. Work is for the Corps of Engineers, Portland District, whose estimated cost topped the low bid by 18%.

Besides the closure dam, this contract covers construction of access railroad spurs and miscellaneous roads, fills and grading, removal of railroad overpasses, earthfill, haul road and cellular cofferdams, and the removal and salvage of equipment from The Dalles-Celilo Canal and Locks.

Atkinson & Ostrander have handled four of the seven major contracts on this $300 million dam and power house project. For their unit prices on the power plant, the fishladder and non-overflow dam see ENR 1-28-54, page 105.

Work on the dam closure is to be completed August 1, 1957, shortly before initial energy is scheduled from the power house. Liquidated damages amount of $4,000 per calendar day.

The contract requires cooperation with other firms working during the same period on other features including the installation of turbines, generators and other equipment.

Access to the site is by an abandoned highway, or temporary access roads or railroad, if the contractor elects to build them.

Minimum wage rates per hour are $2.805 for carpenters, $2.13 for general heavy labor and $2.80 for machinists work in Wasco and Sherman Counties, Oregon; these rates are $2.705, $2,18 and $2.80 for the same work performed in Klickitat County, Washington.

Bidders include:

1C	Guy F. Atkinson Co., South San Francisco, Cal., Ostrander Constr. Co., Portland, Ore.	$4,338,085
2	Morrison-Knudsen Co., Inc., General Construction Co, Seattle, Wash.	$5,456,145
6	Fred H. Slate Co., E. C. Hall Co., Portland, Ore.	$6,745,223
EE	Corps of Engineers, Portland Dist.	$5,114,519

Bids: 9-20-55 Items	Unit	Quantity	Unit Price 1C	2
Remov rock rim	cy	110,000	$1.50	$2.50
Fndn excav, unclass	cy	52,000	0.96	0.70
Foundation cleanup	sy	15,000	3.50	3.60
Stripping	cy	200,000	0.59	0.66
Quarry run rock & spalls	cy	1,350,000	1.18	1.30
Embankment gravel	cy	317,000	0.75	0.85
blanket material	cy	658,000	0.88	1.57
Lower embank matl ip	cy	119,000	1.60	2.50
Dumped rock revetmt, p	cy	15,000	0.90	4.00
Embankments, remov	cy	330,000	0.85	2.00
Conc	cy	560	60.00	66.00
foundation repair	cy	200	25.00	40.00
Misc metal in bridge	lb	6,730	0.68	0.80
Portland cement	bbl	950	4.75	5.30
Steel reinforcement	lb	89,500	0.12	0.16
Remove and stockpile steel sheet piling	t	10,580	65.00	55.00
Excav and grade roads, railroad & serv areas	cy	8,900	0.80	2.25
Base preparation	sy	46,000	0.50	0.07
Crushed stone, p	cy	2,900	1.30	2.64
Metal guard rail, f and i	lf	2,450	2.00	0.94
	lf	4,450	3.45	3.00
Railroad track, remov	ls	1 job	10,000	4,500
Railroad, construction	r/ft	10,790	4.60	3.68
Ballast, del	cy	1,800	4.50	1.60
Sewer system	ls	1 job	24,000	10,600
Drainage system	ls	1 job	16,000	8,600
Water & fire protect sys	ls	1 job	14,000	8,860
Oil transf line extension	ls	1 job	29,500	21,185
Trash boom	lf	620	8.00	5.70
Electric pwr line, reloc	ls	1 job	7,000	4,600
Overpass, ry, rem	ls	1 job	5,500	2,000
hway, rem	ls	1 job	38,000	12,400
Dalles-Celilo Canal and Locks, salvage equip and del to Gvt	ls	1 job	8,000	31,000
Credit to Gvt for salvable equip and matl	ls	1	11,000	1,000
Flangeway	lr/ft	2,050	8.00	3.60
Ground mat	ls	1 job	9,800	7,050
Liquid asph, MC-2, ip	t	135	55.00	46.00
Mineral aggregate, ip	cy	680	4.75	6.60
Steel bearing piles ip	lb	67,000	0.15	0.16

*f furnish *i install *ip in place *p place
*/ Total if contractor keeps salvagable equipment:
1C $4,319,085, 2 $5,456,145, 6 $6,645,312, EE $5,093,989

Black Canyon Dam Repairs

To rehabilitate the face of Black Canyon Dam, about seven miles northeast of Emmett, Idaho, the Bureau of Reclamation, Boise, Idaho, awarded a $163,503 contract to C. B. Lauch Construction Company, Boise. This was the low of seven bids. It was under the engineer's estimate by 22% and under the highest bid of 41%.

George G. Stamm is the superintendent for the Bureau.

The seven bidders included:

1C	C. B. Lauch Constr. Co., Boise, Ida.	$163,503
2	John E. Alexander, Seattle, Wash.	$177,324
7	Macco Corporation, Paramount, Calif.	$273,631
EE	Bureau of Reclamation, Boise, Ida.	$201,486

Bids: 9-7-55 Items:	Unit	Quantity	Unit Prices 1C	2
Excav at toe of abutments	cy	600	$10.00	$10.00
Backfill	cy	500	1.50	3.00
Excav exist conc, 3" and less in depth	sy	2,350	10.00	10.00
more than 3" in depth	cy	110	75.00	170.00
Drill holes for anchor bars & grout bars i,p	lf	41250	4.25	3.00
Split sewer-pipe drains, f&p	lf	2,150	1.00	2.00
Metl pipe for drain outlet and exl of drainage holes, f&p	lb	310	2.00	0.40
Cement, f&h	bbl	1,700	7.50	6.00
Bars, reinf, f&p	lb	78,000	0.14	0.15
Conc in face slabs	cy	1,150	70.00	77.00

*ip in place *f furnish *p place *h handle

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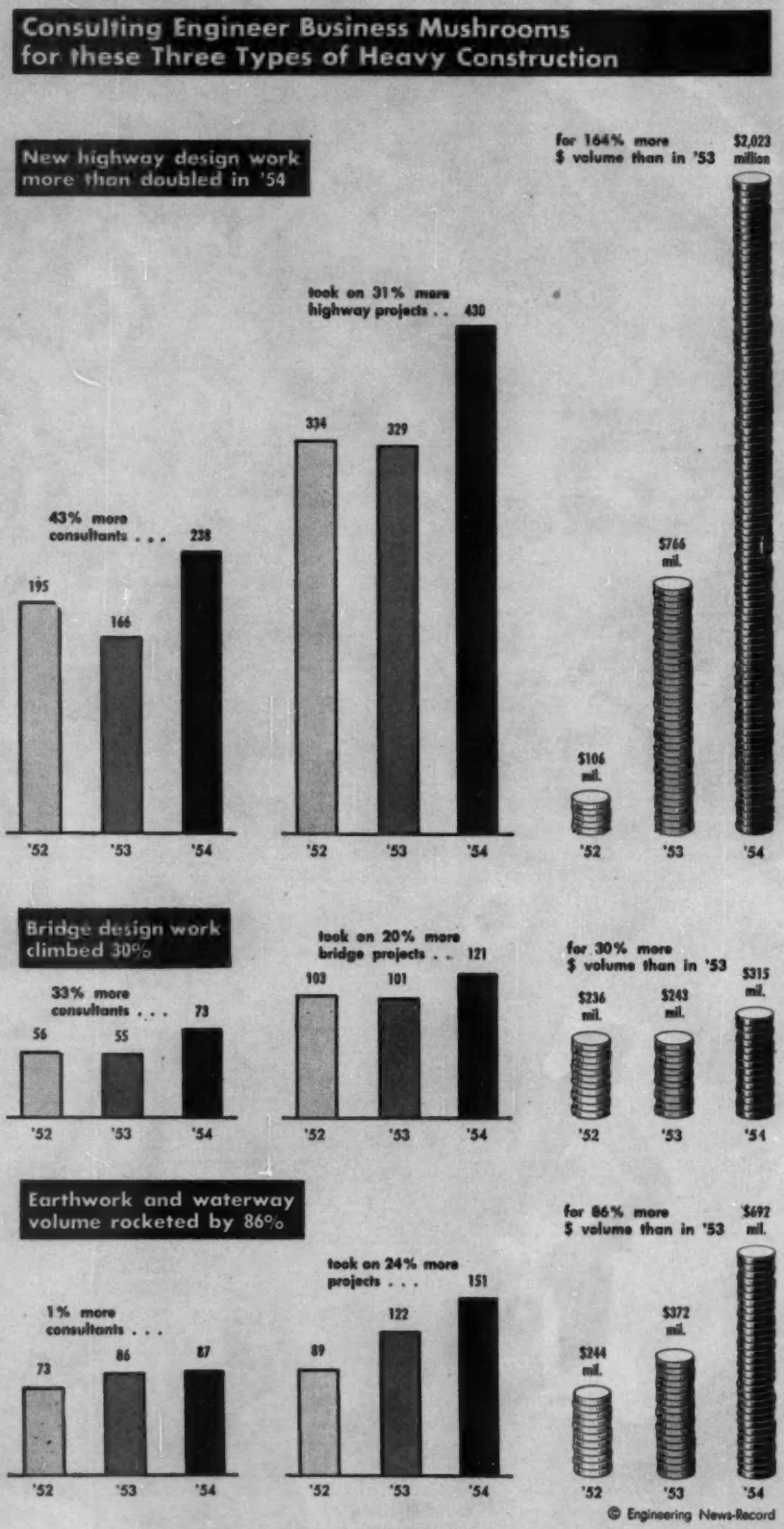
BUSINESS AND FINANCE

Consulting Engineer Work Up 30% in 1954



Design work on heavy construction projects poured into consulting engineers' offices last year. The dollar volume was up 30% over 1953. At the same time, the number of consulting firms taking on new jobs totaling $100,000 or more increased 5% during the year.

These are the high points of ENR's annual survey of consulting engineers (table, below). The survey also showed that there were 1,250 firms in the $100,000- and-up category last year. They took on 4,713 projects, with a total estimated cost of almost $6.2 billion. The number of projects dropped 3% below 1953.

This survey will be supplemented in a later issue by an analysis of new business of architect-engineer firms, which may include some building work not shown here.

Sparking the big increase in design work last year were highways, bridges, and earthwork & waterways. In each of these categories, consultants took on many more projects than in 1953—and total dollar volume of projects increased substantially (chart). The reason for the big jump in highway and bridge design work is largely due to the big volume of toll facilities which has been going to consultants.

Other types of heavy construction have also been boosting consultants' new business (table). Of these, the biggest gain last year was in unclassified construction, where the estimated cost of new jobs increased 8% and the number of consultants rose 6%. At the same time, the number of new projects of this type dropped 18%.

Waterworks volume increased 5%, industrial building 3%, and airport design work 1% in 1954. While the number of consultant firms on airport jobs was up 1% and the number of projects rose 23%, there were fewer consultants and fewer projects on both industrial building and waterworks.

In other fields, volume was off. Sewerage jobs dropped 24%, and non-industrial buildings (commercial, private housing, and public) dropped 16% below 1953. Federal work handled by consultants was off 42%.

• **Million-dollar consultants**—Consultants who took on $1 million or more of new business in all types of construction showed the biggest increase. That means both dollar volume (up 32%) and number of firms

(up 9%). There were 536 firms in this group, and they took on 3,395 projects which accounted for nearly all the total dollar volume. The sharp gain in volume of highway and bridge design business was especially substantial for these firms.

ENR's survey shows that 135 firms took on highway projects, a gain of 61% over the previous year. In terms of dollar volume, the gain was 166%. Dollar volume was about $2 billion, almost one third of the total dollar volume done by the million-dollar-plus firms.

As a matter of fact, these firms handled from 99% of all highway projects taken on by all firms doing $100,000 or more new business.

In the case of bridges, there were 57 of the million-dollar consulting firms active last year, 46% more than the year before. They upped dollar volume to $309 million, a 30% gain. And, they handled 98% of total bridge work.

• **$500,000-$1,000,000 group**—New business last year held about even for consulting firms in this group, but their number dropped by 8%. They handled about 2% of total dollar volume; and they had nearly 10% of the projects. Volume of new work was up substantially in highways, airports, earth & waterways, sewerage, and bridges.

The big percentage gains, however, particularly those shown in federal work, are due mostly to the fact that 1953 volume was low in many categories. Hence a gain of $1 million or so in volume shows up as a hefty percentage increase.

• **$100,000-$500,000 group**—For the firms starting from $100,000 to $500,000 of new business last year, volume was up 8%. Total volume was about the same as for the $500,000-$1,000,000 group. The number of firms increased 6%. Handling 2% of total dollar volume of new business last year, they had 18% of the projects.

This was the only group to increase new business in non-industrial building—a gain of 18% in dollar volume, 19% in number of jobs.

However, this group had a sharp decline in industrial-building jobs—the only one of three groups that showed any decline in volume. And in this group the decline was substantial right across the board: Number of projects and number of firms as well as volume.

In nonbuilding design, these firms upped new business in their biggest field, sewerage, by 23%. (This is also the biggest nonbuilding field for firms in the $500,000-$1,000,000 group. They boosted volume 27% last year).

Other increases in dollar volume came in earthwork & waterways and in highways.

In addition to the forthcoming architect-engineer survey, there will also be a separate study of new business of architectural firms.

Consulting Engineer* New Business in 1954—by Type of Work

As reported by ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY

1250 firms took on 4,713 heavy construction projects costing an estimated $6,176 million

	All Engineers			Total '54 Volume of All Types — $1,000,000 or More			$500,000-$1,000,000			$100,000-$500,000		
Other Than Building	Number of Firms	Number of Projects	$ Volume Millions	Number of Firms	Number of Projects	$ Volume Millions	Number of Firms	Number of Projects	$ Volume Millions	Number of Firms	Number of Projects	$ Volume Millions
Non building												
Waterworks	320	1,003	$326.6	167	759	$296.8	47	91	$13.6	106	153	$16.0
Sewerage	389	1,074	449.1	175	745	394.4	60	130	27.7	154	199	27.0
Bridges	73	121	315.2	57	101	309.3	5	6	3.6	11	14	2.3
Highways	238	430	2,022.7	135	282	2,001.1	26	46	8.6	77	102	13.0
Earthwork, irr., drain	87	151	602.3	50	87	686.4	8	8	1.5	29	56	4.4
Airports	73	174	127.3	46	136	121.2	8	14	3.1	19	24	3.0
Unclassified	266	559	552.6	141	394	522.2	30	42	11.2	95	123	19.2
Total nonbuilding	...	3,512	4,485.8	...	2,504	4,331.4	...	337	69.5	...	671	84.9
Building												
Industrial buildings	212	319	678.5	102	192	648.4	25	35	14.0	85	92	16.1
Mass housing, commercial and public buildings	403	882	1,012.1	243	699	947.0	70	88	39.2	90	95	25.9
Total building	...	1,201	1,690.6	...	891	1,595.4	...	123	53.2	...	187	42.0
Federal (incl in above)	72	184	127.5	44	137	120.7		9	2.5	21	38	4.3
All heavy construction	1,250	4,713	6,176.4	536	3,395	5,926.8	184	460	122.7	530	858	126.9

How Consultants'* New Business in '54 Compared with '53

5% more firms were active. They took on 30% more $ volume, though 3% fewer projects

	All Engineers Per Cent Change '53-'54			Total Volume of All Types — $1,000,000 or More Per Cent Change '53-'54			$500,000-$1,000,000 Per Cent Change '53-'54			$100,000-$500,000 Per Cent Change '53-'54		
Other Than Building	Number of Firms %	Number of Projects %	$ Volume %	Number of Firms %	Number of Projects %	$ Volume %	Number of Firms %	Number of Projects %	$ Volume %	Number of Firms %	Number of Projects %	$ Volume %
Nonbuilding												
Waterworks	− 2	− 6	+ 5	− 3	− 6	+ 6	+ 9	+18	− 1	− 4	−15	0
Sewerage	− 2	−13	−24	−16	−20	−27	+11	+24	+27	+ 15	+ 2	+23
Bridges	+33	+20	+30	+46	+29	+30	−17	−33	+20	+83	+56	−23
Highways	+43	+31	+164	+61	+30	+166	+44	+53	+115	+20	+24	+44
Earthwork, irr., drain	+ 1	+24	+86	+ 4	+21	+86	+14	0	+50	− 6	+33	+47
Airports	+ 1	+23	+ 1	−12	+19	0	+60	+100	+55	+27	+14	0
Unclassified	+ 6	−18	+ 8	+17	−19	+17	− 3	−35	−34	− 5	− 2	− 4
Total nonbuilding	....	− 4	+55	....	− 7	+58	....	+12	+10	....	+ 2	+13
Building												
Industrial buildings	−12	−11	+ 3	− 1	− 1	+ 4	− 4	−13	+ 8	−23	−26	−19
Mass housing, commercial and public buildings	+ 3	+ 5	−16	+ 9	+ 7	−16	−20	−17	−17	+10	+19	+18
Total building	....	+ 0.4	− 9	....	+ 5	− 9	....	−16	−11	....	− 9	0
Federal (incl in above)	− 8	+38	−42	−25	+29	−44	+17	+350	+525	+62	+52	+43
All heavy construction	+ 5	− 3	+30	+ 9	− 4	+32	− 8	+ 3	−0.3	+ 6	− 1	+1

* Not including architect-engineers who will be reported separately.

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7143

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Activity This Week

As reported to ENR
(In millions of dollars)

Amount of contracts let

(millions of dollars)	This Week	Cumulative 43 wks 1955	1954	% chge
By Ownership				
Federal	$29.9	$1,419.7	$1,039.3	+37
State and municipal	87.8	4,453.9	4,092.6	+9
Total public	117.7	5,873.6	5,131.9	+14
Total private	177.5	9,786.0	6,692.0	+46
U. S. Total	$295.2	$15,659.6	$11,823.9	+32
By type of work				
Waterworks	$9.3	$231.3	$200.2	+16
Sewerage	5.1	332.8	317.6	+5
Bridges	9.7	407.2	416.3	−2
Highways	28.9	1,821.0	1,580.3	+15
Earthwork, waterways	13.5	461.9	272.2	+70
Buildings:				
Public, excl. hsg.	36.2	1,462.7	1,449.7	+1
Public housg.	1.8	225.1	198.4	+13
Private housg.	118.8	5,305.2	3,491.5	+52
Commercial	22.9	1,393.1	1,122.6	+24
Industrial	28.8	2,343.0	1,572.9	+49
Unclassified	20.2	1,676.3	1,202.2	+39
U. S. Total	$295.2	$15,659.6	$11,823.9	+32

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

New capital for construction

(millions of dollars)	Week of Oct. 20	Cumulative 42 Wks 1955	% Chge '54-'55
Corporate securities	$26.3	$2,841.7	+18
State and municipal:			
All except housing	143.1	3,413.8	−22
Housing	...	72.0	−21
Federal loans	0.5	110.4	+10
Federal aid	...	853.5	+27
Total nonfederal	$169.9	$7,291.4	−5
Federal appropriations:			
In U. S.	...	$3,379.7	+63
Outside U. S.	...	84.6	+155
Total new capital	$169.9	$10,755.7	+10

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction cost	10/20	673.57	323.78	141.20
	9/29†	673.95	323.97	141.28
Building cost	10/20	479.47	259.19	136.29
	9/29†	480.05	259.50	136.46
Volume	Sept.	576	234	166
	Aug.	508	207	147

† Official Indexes for October

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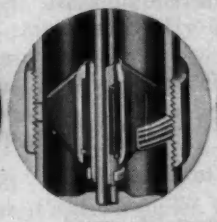

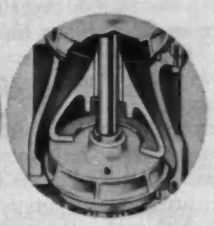

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Labor's Stake in Automation

To what extent will automation affect the broad field of labor relations within the construction industry?

A shorter work week and higher wage scales emerged last week as some of the possible answers when Congress launched its probe into the impact of automation upon our economy.

Although widely divergent views were expressed before the Congressional subcommittee of the Joint Committee on the Economic Report, CIO president Walter Reuther led the vanguard of those who considered the implications of automation so far-reaching that even those industries not adaptable to it may feel its effects.

• **Broad aspects**—Citing a four-day week for American labor within the next 10 years as a likely result of the current trend, Reuther stressed the need of positive action to minimize the economic dislocations that may result in the nation's adjustment to the new technology—which he described as "the second Industrial Revolution." Among the "cushions" he recommended in order to avoid "untold harm to millions of innocent people" were these:

• A shorter work week obtained in two ways—through collective bargaining and by reducing the statutory maximum from 40 to 30, or 35 hours.

• Higher wage scales, obtained by negotiation and by raising the minimum wage to $1.25, in order to increase consumer purchasing power.

• Earlier retirement, achieved in part by amendments to the Social Security Act, and longer vacations.

Although other experts disagreed—maintaining that the birth of new industries and the nation's growing demand for goods will require a 40-hour week for many years to come—Reuther's views are not new. Last spring, for example, one of the AFL international presidents said that automation has given trade unions "a great challenge—if not the greatest challenge with which American organized labor has ever been confronted." His plan to offset the effects of automation also embraced shorter hours and higher wage scales, and included liberalization of unemployment benefits.

This does not mean that organized labor is opposed to automation. One AFL spokesman has said: "Labor is not afraid of automation." Reuther has summed it up this way: "We welcome automation. We believe that the more progress we can make in improving the tools of production so that we can create greater and greater economic wealth with less human effort, that this is desirable, but we need to find a way to gear that greater production to the needs and hopes and aspirations of the great mass of people—".

• **Another approach**—Discussions of automation at the 10th Annual Instrument-Automation Conference and Exhibit held last month in Los Angeles by the Instrument Society of America showed that regardless of the approach there is little basic disagreement between management and labor on the implications of automation.

Outlining the future of automation, Robert T. Sheen, ISA president, said, for example: "It would be an oversimplification to believe that all this is possible without some temporary dislocations and without growth problems . . . labor and management both share an opportunity and a responsibility. Labor's opportunity is for a better standard of living and eventually a still shorter work week—its responsibility to promote understanding and cooperation with management to promote automation. Management's opportunity is for the production of more goods at lower costs, and at a satisfactory profit—its responsibility to minimize dislocations and to smoothly develop the acceptance and adoption of automation."

Arnold Beckman, who headed the ISA conference committee, also predicted a shorter work-week. He stated that "the intelligent development of automation in industry will result in giving the average worker a 30-hour work week within the next five to ten years, with no reduction in pay or standard of living." He grounded his prediction on the belief that automation will produce more jobs, increase productivity and raise income levels—thus permitting a reduction in the work week, which may be one of labor's next big demands anyway.

If a shorter work week does become an active issue—and this year there was a growing awareness of the possibility even within the building trades, particularly on the west coast—it may itself act as one of the cushions to automation's impact. And, some experts say that a shorter work week, coupled with an expanding population, a less rapidly growing work force and an increased demand for goods, makes automation a likely candidate to fill the gap between the productivity needed in the future and the manpower that will be available to produce it.

• **Some misconception**—Conscious of the fact that the sobering controversy over the impact of automation—now highlighted again by the Congressional attempt to find out what it may mean to the national economy—will continue for a long time, ISA stressed these points in Los Angeles:

• Automation is evolutionary, not a second industrial revolution.

• It "supplements the brain" as opposed to mechanization, which replaces or amplifies "human brawn." Like the common thermostat, it involves "feedback" or self correction.

• Though not new, it is still in its infancy. Principal areas into which it fits are process industries, such as chemical manufacturing and petroleum refining; metal cutting and assembly work, involving machine tools, transfer machines, material handling equipment, inspection and assembly of components; and data processing work.

• Its use has been spurred by manpower shortages that occurred during the war, by military and private research programs and the necessity of holding down prices in face of mounting costs.

• A completely automatic—and economically sound—factory is a long way off and there are many problems still to be solved.

• History shows that new inventions and new techniques have created rather than reduced employment.

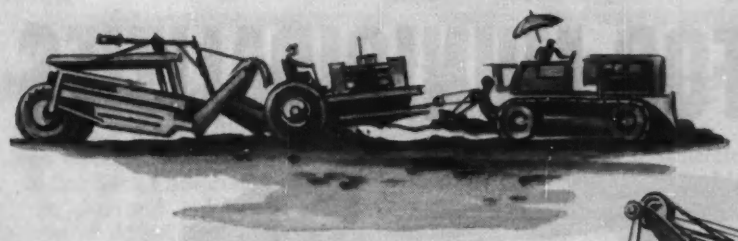
(*Labor continued on page 109*)

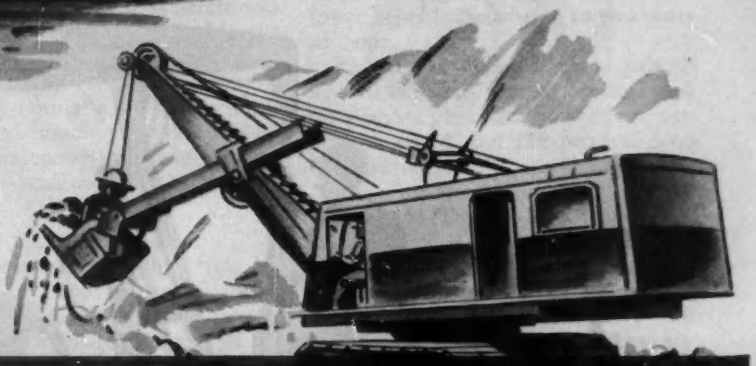
Higher Pay For Engineers

The North Carolina Highway Employes Association will seek a general pay raise for highway engineers from the state legislature.

Prompting the action, embodied in a resolution adopted by the association at its annual meeting in Winston-Salem, N. C., is the "continued rise" in the cost of living and the "widening gap" between salaries of state employes and those of private industry.

The association rejected a proposal to seek pay for work during emergencies, such as hurricanes and snowstorms, for which highway employes now receive compensatory time.





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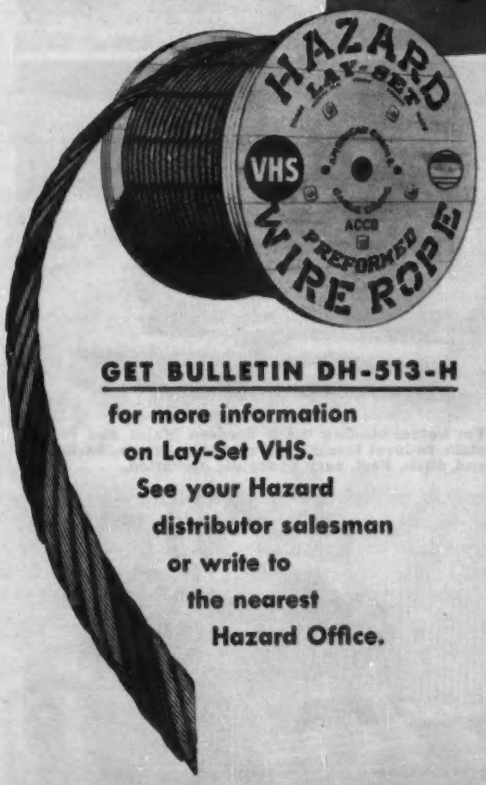

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Stronger, tougher LAY-SET VHS lasts longer under the punishment which shovel hoist ropes, drag lines and scraper cables get. It drastically cuts "down time" of equipment for wire rope replacement. This saves you money!

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You don't need complicated specifications to order LAY-SET VHS. Just ask your Hazard distributor for LAY-SET VHS shovel hoist ropes, scraper ropes or drag lines in the size you want. Call him today.

HAZARD WIRE ROPE DIVISION
American Chain & Cable Company, Inc.

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Omaha, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.

MONEY-SAVER FOR MUNICIPALITIES

Fordson Major Diesel Tractor

Municipalities—and county, township and state governments, too—are making their dollars work harder by investing them in Fordson Major Diesel Tractor power. And for good reasons!

First, this versatile tractor meets dozens of different public works needs. Almost every department can use it to save money and manpower. Equipped with a backhoe, for example, the Fordson Major will lower the cost of installing and servicing water mains and sewer connections. Equipped with a front-mounted loader, it will speed loading of sand and gravel, clean up around excavating jobs, load snow and distribute salt. Other low-cost attachments equip the Fordson Major for all sorts of lifting, hauling, mowing and grading jobs.

Next, this tractor is exceptionally easy to handle—little operator experience or training needed. It's highly maneuverable, too, for work in close quarters and inside buildings.

Best of all, the Fordson Major is priced low. You get 40.6 belt and 36.3 drawbar horsepower for hundreds of dollars less than you'd pay for competitive diesel tractors with similar power and equipment.* You'll save every day on fuel, oil and upkeep, too.

Your nearby Ford Tractor and Equipment Dealer will give you complete information about how a Fordson Major Diesel Tractor can stretch tax-dollars for your municipality. Call him soon.

Based upon comparison of suggested list price at port of entry with published suggested list prices of competitive tractors f.o.b. factory.

For better blading use a Fordson Major and rear blade to level berms, mix aggregate, grade, backfill and ditch. Fast, easy hydraulic operation.

Scarify this easy way with a Fordson Major and quick-attached implement. One man can scoop, scarify, level and backfill from the tractor seat.

TRACTOR AND IMPLEMENT DIVISION
FORD MOTOR COMPANY
Birmingham, Michigan

A Multi-Million Dollar Strike

Last week, the construction industry in Southern California found itself tied in a critical and costly knot as millions of dollars worth of construction activity became the victim of an AFL teamsters' strike directed—not at contractors—but at 29 members of an allied industry.

Stemming from a breakdown in contract negotiations, the strike, which started on Oct. 3, was against members of the Southern California Rock Products Association.

Estimates of the value of construction seriously hampered or completely halted ran as high as $250 million, largely represented by commercial and public works projects.

With no break in sight, here's how the picture looked as the week ended:

- A number of freeway projects were entirely stymied or reduced to excavating or filling operations.
- Approximately $10 million worth of flood control projects were thrown into a critical slowdown, with present indications that completions scheduled for next month will run into next year.
- Air base work was seriously curtailed.
- The AGC predicted that nearly all new heavy construction and commercial projects would be shut down.
- Tract building, less affected, faced serious curtailment.
- Because of the drop in construction, allied crafts, such as metal window frame producers, were feeling the impact.
- One of the few beneficial results was that some companies, like steel producers, who were snowed under by back orders, were finding a chance to get caught up.

• **The key**—The firms that were struck produce 90% of the rock aggregates—crushed rock, sand, gravel—and ready mixed concrete in the Los Angeles-Orange County area. Although not directly connected with the strike, other materials in short supply were concrete blocks, asphalt, cinder blocks and other materials utilizing sand and gravel in their production.

Through last week, 80% of concrete block production in the area had been halted. Cinder and other lightweight block manufacturers were getting small amounts of sand from outside areas, but supply was limited. Private contractors had difficulty getting asphalt, although some municipal plants were still in production. Cement was available but couldn't be used for concrete. Some concrete was trickling in, at sometimes double the usual cost, from other counties—but one guess was that it added up to only 1% of that normally used in the area. Only meager amounts could be supplied by independent producers and distributors—and most of this went to small jobs.

• **Strike issues**—Behind the strike lay a number of union demands, which the employers said, if granted, would add up to a package increase of 30 cents an hour.

Main issue was the teamsters' demand, rejected by the employers, for a pension plan that calls for a 10-cent hourly contribution by employers to the Western Conference of Teamsters Pension Plan. The major group in the Los Angeles area now contributing to the fund is the trucking industry. Although the fund is jointly administered, the companies, relatively small in number, claimed they would have no control over employer appointees and no effective voice in administration of the fund.

Other demands included a guaranteed eight-hour day, a 40-hour week, new discharge procedures, seniority as to lay-offs and rehirings, and equal distribution of work time. No dispute had arisen over the companies' offer of a 15-cent hourly wage increase, plus fringe benefits amounting to two cents an hour.

The union claimed these miscellaneous demands were as important as the pension plan. But most of the employers agreed that the pension issue was the only really stumbling block.

• **Sidelights**—Despite the effects of the strike, which was throwing operating engineers, cement masons, laborers and other construction workers out of work, the AFL's Central Labor and Building Trades Councils of Los Angeles were supporting the strikers, although no direct intervention had occurred. And, according to a spokesman for the teamsters' union, the AFL was not yet involved on the international level.

In retaliation, the struck employers have hauled four of the teamster locals—plus Joint Council of Teamsters 42 and the International Brotherhood of Teamsters—before the National Labor Relations Board on unfair labor practice charges, which are now being investigated on the local level. The employers' attack is leveled against the union demand for the pension plan in an effort to test the legality of the teamster fund.

Canadian Labor Purge May Boomerang

A strong left-wing tide, sweeping over the British Columbia Trades Union Congress convention just concluded in Vancouver, was convincing evidence to many that the communists are trying for a comeback in Western Canada.

A last-minute 56 to 54 vote, favoring admittance of left-wing unions, hit labor leaders like a jet-blast and evoked the prediction of a communist drive to control labor in the province.

The B. C. Trades Union Congress is the provincial arm of the National Trades and Labor Congress, which next spring will merge with the Canadian Congress of Labor into a single 1,000,000-member national labor organization.

Following the convention, James Barton, BCTU president, said he would fight for admission of Communist-dominated unions to the upcoming merged national labor group when he attends the joint TLC and CCL merger convention in Toronto.

Veteran labor men in Vancouver said that among the basic causes for the left-swing were recent purges of B. C. electrical workers and carpenters unions, by United States union bosses. Describing the action as "interference," they claim it swung a large number of right-wing votes to the side of the progressives, who turned up at the convention in full force while many right-wing unions were absent.

Meanwhile, stronger leftist activity is reported in the Building Trades Council (TLC) painters union and others, as a result of the progressives' victories during the TUC convention.

The TUC "open-door" resolution (passed in the dying hours of the convention with nearly a third of the delegates absent) does not mean that Canadian labor is going to do an about face on communists, but it does indicate to many that the Reds are trying hard to re-establish themselves while international tension is easing.

On the national level, Claude Jodoin of Montreal, president of the parent Trades and Labor Congress and now slated to head the merged TLC-CCL, re-echoed the "keep out" order Canadian labor issued to communits five years ago.

OFFICIAL PROPOSALS

Bids: November 7, 1955

State of New Jersey
State Highway Department
Trenton

READVERTISEMENT

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 6 (1927) RT. U.S. 46 (1953), SECS. 2C & 3C

Route 6 (1927) Route U.S. 46 (1953), Sections 2C and 3C, from Homestead Avenue to Route 63, Resurfacing Existing Bridges, Boroughs of Palisades Park and Fort Lee, Bergen County. Length of project 0.866 miles. The principal items of work are:

Estimated:

3,108 sq. yds. Pavement Surface Removal
3,108 sq. yds. Pavement Type MA-BC-2, 2½" thick

Bids for the above will be received at the office of the State Highway Department, in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Monday, November 7, 1955, at TEN o'clock (10:00 A. M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plan and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans and supplementary specifications will be furnished upon payment of a fee of FIFTEEN DOLLARS ($15.00) for each set upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., with a check drawn to the order of the State Highway Department. A charge of $5.00 will be made for supplementary specifications unaccompanied by construction plans. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by the following documents: (1) a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00; (2) a proposal bond for a sum of not less than fifty percent (50%) of the total price bid for the project; (3) a financial statement (Part 1 of the Prequalification Questionnaire); (4) a plan and equipment statement (Part 3 of the Prequalification Questionnaire); and (5) a Non-collusion Affidavit executed in duplicate; and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed:
STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: November 10, 1955

Saratoga Springs, N. Y.

NOTICE TO BIDDERS
REARRANGEMENT OF FIFTH FLOOR OF
GIDEON PUTNAM HOTEL,
SARATOGA SPRINGS, N. Y.

Separate sealed proposals covering Construction, Heating and Ventilating, Sanitary, Electric and Elevator Work for Rearranging of Fifth Floor of Gideon Putnam Hotel, Geyser Park, Saratoga Springs, New York, in accordance with Specifications 11-O; 11-HV; 11-S; 11-E and 11-EL and accompanying drawings will be received by the Saratoga Springs Authority at its offices in the Administration Building, Geyser Park, Saratoga Springs, N. Y., until 2:30 P.M. Eastern Standard Time on Thursday, November 10th 1955, when they will be publicly opened and read.

OFFICIAL PROPOSALS

Each proposal must be made upon the form and submitted in the envelope provided therefor and shall be accompanied by a certified check, made payable to the Saratoga Springs Authority for 5% of the amount of the bid as a guaranty that the bidder will enter into the contract if it be awarded to him. The specification number must be written on the front of the envelope. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal. The Saratoga Springs Authority reserves the right to reject any or all bids. Successful bidders will be required to give a bond conditioned for the faithful performance of the contract in the sum of 100% of the amount of the contract and a separate bond for the payment of laborers and materialmen in the sum of 100% of the amount of the contract.

Drawings and specifications may be examined free of charge at the office of the Saratoga Springs Authority, Administration Building, Geyser Park, Saratoga Springs, New York and at the office of the Architect, August Lux and Associates, 143 Washington Avenue, Albany, New York.

Drawings and specifications may be obtained at the above named office of the Saratoga Springs Authority, by making a deposit for each set as follows: Construction $15.00; Heating and Ventilating $10.00; Sanitary $10.00; Electric $5.00 and Elevator $5.00 or by mailing such deposit to the Saratoga Springs Authority at the above address. Check should be made payable to the Saratoga Springs Authority. Proposal blanks and envelopes will be furnished without charge.

Bids: November 17, 1955

Town of Bethlehem, N. Y.

ADVERTISEMENT
NOTICE TO CONTRACTORS

Notice is hereby given that sealed bids or proposals enclosed in sealed plain wrapper bearing the appropriate identification, "Bid for Vly Creek Reservoir, Dike and Dam," will be received by the Board of Water Commissioners at its office in the Town Hall, Town of Bethlehem, New York at 7:30 P.M. Eastern Standard Time on the 17th day of November, 1955; and then will be publicly opened and read aloud at a meeting of said Board, to be held at such time and place.

The work includes the construction of a compacted earth fill dike, 1720 feet long with a maximum height of 40 feet, on the south branch of Vly Creek and a similar earth fill dam with concrete spillway on the east branch of Onesquethaw Creek, in the Town of New Scotland, southeast of the Hamlet of New Salem. The maximum height of the dam will be 25 feet. The dike and dam will have steel sheet piling corewall with sheet piling and concrete cutoff wall at the dike and a concrete cut-off wall at the dam. Both structures will have dumped stone rip rap on their up-stream surfaces. The work will also include reservoir drains, and intake works at the dike.

Copies of the plans and specifications may be examined at the office of the Town Clerk of the Town of Bethlehem, New York, 393 Delaware Avenue, Delmar, New York, or at the office of the Engineers, Benjamin L. Smith & Associates, 11 North Pearl Street, Albany, New York; copies thereof may be obtained from the Board and/or Engineers upon payment of Twenty ($20.00) Dollars for each set of plans and specifications.

Proposals must be submitted on the blank forms provided and in a manner designated therein. Each proposal must be accompanied by a Bid Bond or certified check in an amount equal to Five Per Cent (5%) of the total bid. The Bid Bonds or certified checks of all but the three lowest bidders will be returned within three days after the opening of bids, while the remaining bonds or checks will be returned as soon as a contract has been executed. The Bid Bond or certified check of the successful bidder will be retained to pay any loss or damage to Water District No. 1 and/or the Town of Bethlehem, in the event said successful bidder shall refuse or neglect to enter into a contract in accordance with his proposal. Acceptance of the bid will be contingent upon the fulfillment of this requirement by each bidder.

The Board of Water Commissioners reserves the right to consider bids for a period of Forty-five days after their opening, and the right is reserved to reject all bids.

BOARD OF WATER COMMISSIONERS,
WATER DISTRICT NO. 1,
TOWN OF BETHLEHEM, NEW YORK.
By: Harold C. Barkhuff, Chairman

OFFICIAL PROPOSALS

Bids: November 25, 1955

Primera Central Hidroelectrica Cubana (Prichec)

CONSTRUCTION OF DAMS AND APPURTENANT WORK
CONTRACT C-2

Sealed bids for Construction of Dams and Appurtenant Work for the Hanabanilla Project will be received by the Primera Central Hidroeléctrica Cubana, hereinafter referred to as PRICHEC, at Edificio de la Lonja del Comercio, Sexto Piso, Havana, Cuba, until 10:00 A. M., Eastern Standard Time on November 25, 1955, at which time the bids received in Havana will be opened. Bidders are also required to send a sealed copy of the bid, for receipt not later than 10:00 A. M. Eastern Standard Time on November 25, 1955 to Knappen-Tippetts-Abbett-McCarthy, Engineers, hereinafter referred to as the Engineer, at 62 West 47th Street, New York 36, New York, U. S. A. The work under this Contract is part of the Hanabanilla hydroelectric dam and power project located at the Hanabanilla River about 50 kilometers east of Cienfuegos, Cuba.

The work under this Contract consists of the Construction of four earth and rock fill dams: Hanabanilla Dam, Jibacoa Dam and Saddle Dams Nos. 1 and 2. The work also includes care of water during construction, clearing and grubbing, excavation, grouting, concrete and other incidental work.

The following approximate quantities are involved in the work: 2,500,000 cubic meters of earth and rock embankment and 300,000 cubic meters of earth excavation.

Contract Documents including drawings and specifications may be examined at the above offices of PRICHEC and of the Engineer. Contract Documents may be obtained at the above offices of PRICHEC and of the Engineer upon payment of twenty-five dollars ($25.00) per complete set, which payment will not be refunded.

Each bid received at Havana must be accompanied by a bid guarantee in the form of cash, certified check drawn on any bank associated with the Banco Nacional de Cuba, or National Public Securities, the latter being accepted at their face value. The amount of the bid guarantee shall not be less than two percent (2%) of the total bid price. Return of the bid guarantee is covered in the Information for Bidders included in the Contract Documents.

KNAPPEN-TIPPETTS-ABBETT-McCARTHY,
ENGINEERS FOR PRICHEC

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4544) will be received at Torrington, Wyoming until November 17, 1955, for furnishing labor and materials for Cottonwood Siphon, Interstate Canal, North Platte Project, Wyoming. Location near Ft. Laramie, Wyoming. Principal items are 300 cu. yds. foundation; excavation for structures; 1,200 cu. yds. compacted backfill; 1,370 cu. yds. concrete; and other work. Completion time 135 days. For particulars, address Bureau of Reclamation, P. O. Box 280, Casper, Wyoming or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4543) will be received at Huron, South Dakota, until November 29, 1955, for furnishing labor and materials for stringing conductors and overhead ground wires for Watertown-Granite Falls and Granite Falls-Northern States Power Company 230-kilovolt Transmission Lines and constructing footings and erecting towers for Granite Falls-Northern States Power Company 230-kilovolt line, Missouri River Basin Project, South Dakota-Minnesota. Location in Codington and Deuel Counties, South Dakota, and in Lac Qui Parle, Chippewa, and Yellow Medicine Counties, Minnesota. Principal items are constructing 52 footings for steel towers; erecting 285,000 lbs. steel structures; 77.17 miles of line, furnishing and stringing three 954,000 circular mil ACSR conductor; 74.37 miles of line, furnishing and stringing one ½-inch, galvanized steel overhead ground wire; furnishing and attaching 4,580 vibration dampers; and other work. Completion time 210 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Bids: November 29, 1955

Allegheny County Sanitary Authority Intercepting Sewers

CONTRACTS 46, 47 and 49

Sealed bids or proposals for Contracts 46, 47 and 49, for constructing portions of an intercepting sewer, generally in rock tunnel, with connections and other appurtenances will be received at the office of the Allegheny County Sanitary Authority, 701 Civic Building, 200 Ross Street, Pittsburgh 19, Pa. until 2:00 P.M. Eastern Standard time on Tuesday, November 29, 1955. Immediately thereafter they will be taken to Room 410 in the Court House, Grant Street and Fifth Avenue, Pittsburgh, Pa. and then publicly opened and read.

Contract 46 includes approximately three miles of intercepting sewer varying from 54" to 126" inside diameter.

Contract 47 includes approximately three miles of intercepting sewer varying from 36" to 60" inside diameter.

Contract 49 includes approximately six miles of intercepting sewer varying from 48" to 72" inside diameter.

Drawings and contract documents may be examined and obtained at the office of the Authority, 701 Civic Building, 200 Ross Street, Pittsburgh, Pa. A deposit of one hundred dollars ($100) will be required for one set of drawings and contract documents on each contract, which will be refunded on receipt of a bona fide bid and return of the drawings and specifications in good order within sixty (60) days. Only fifty dollars ($50) will be refunded to those who return the drawings and specifications in good order within sixty (60) days after the bidding date, but do not submit a formal bid.

Bid security shall be furnished by certified check or bid bond for ten (10) percent of the bid price. The successful bidder must furnish a Performance Bond and a Labor and Materialmen's Bond, each for 100 percent of the contract price.

The right is reserved to reject any or all bids.

ALLEGHENY COUNTY
SANITARY AUTHORITY
Edmund S. Ruffin, Jr., Chairman

Bids November 25, 1955

Fairfax County, Virginia Integrated Sewerage System

CONSTRUCTION OF A SEWAGE TREATMENT PLANT

Sealed bids will be received at the Office of the Sanitary Engineer, County of Fairfax, Fairfax, Virginia, until Friday, November 25, 1955, at 2:00 P.M., E.S.T. for the construction of: Contract No. 44: A primary sewage treatment plant with an initial capacity of 1.25 M.G.D. Copies of the plans and specifications may be examined without charge at: Alexander Potter Associates, New York; R. Stuart Royer Associates, Richmond, Va.; Associated General Contractors, Charlotte, Greensboro and Raleigh, N. C. and Columbia, S. C.; Builders Exchange Inc., Richmond, Va.; Builders & Contractors Exchange, Norfolk, Va. Plans and contract documents may be examined and copies thereof obtained at the Office of the Sanitary Engineer, upon payment of $15.00 per set, which shall not be returnable. Contractors, whether resident or non-resident in Virginia, will be required to show evidence of a Certificate of Registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered. Each bid must be accompanied by cash, certified check, or by an acceptable bidder's bond in an amount not less than 5% of the amount of the total bid.

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price. No bid may be withdrawn for a period of 30 days after the opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

Harry L. Hale
Sanitary Engineer

Dated: October 20, 1955

Bids: December 20, 1955

Allegheny County Sanitary Authority Sewage Treatment Plant

CONTRACTS 34 to 44, INCLUSIVE

Sealed bids or proposals for Contracts 34 to 44, inclusive, for constructing portions of the Pittsburgh Sewage Treatment Plant, will be received at the office of the Allegheny County Sanitary Authority, 701 Civic Building, 200 Ross Street, Pittsburgh 19, Pa. until 2:00 P.M. Eastern Standard Time on December 20, 1955. Immediately thereafter they will be taken to Room 410 in the Court House, Grand Street and Fifth Avenue, Pittsburgh, Pa. and then publicly opened and read.

Contract 34 includes constructing all foundations and substructures, main sewage conduits, and service tunnels for the Pittsburgh Sewage Treatment Plant.

Contract 35 includes furnishing and installing pumping equipment and furnishing electrical controls for main pumping station.

Contract 36 includes furnishing and installing mechanical equipment and process piping for the Pittsburgh Sewage Treatment Plant and intercepting structures.

Contract 37 includes constructing river wall at the Pittsburgh Sewage Treatment Plant.

Contract 38 includes furnishing and installing sludge incineration equipment for the Pittsburgh Sewage Treatment Plant.

Contract 39 includes constructing chimney at the Pittsburgh Sewage Treatment Plant.

Contract 40 includes construction of superstructures at the Pittsburgh Sewage Treatment Plant and interceptor structures.

Contract 41 includes electrical work at and Pittsburgh Sewage Treatment Plant and interceptor structures.

Contract 42 includes plumbing work for the Pittsburgh Sewage Treatment Plant and interceptor structures.

Contract 43 includes heating and ventilating work for the Pittsburgh Sewage Treatment Plant and interceptor structures.

Contract 44 includes miscellaneous exterior work at the Pittsburgh Sewage Treatment Plant.

Drawings and contract documents may be examined and obtained at the office of the Authority, 701 Civic Building, 200 Ross Street, Pittsburgh, Pa. A deposit of one hundred dollars ($100) will be required for one set of drawings and contract documents on each contract, which will be refunded on receipt of a bona fide bid and return of the drawings and specifications in good order within sixty (60) days. Only fifty dollars ($50) will ge refunded to those who return the drawings and specifications in good order within sixty (60) days after the bidding date, but do not submit a formal bid.

Bid security shall be furnished by certified check or bid bond for ten (10) percent of the bid price. The successful bidder must furnish a Performance Bond and a Labor and Materialmen's Bond each for 100 percent of the contract price.

The right is reserved to reject any or all bids.

ALLEGHENY COUNTY
SANITARY AUTHORITY
Edmund S. Ruffin, Jr., Chairman

Bids: December 6, 1955

Allegheny County Sanitary Authority Upper Allegheny System

INTERCEPTING SEWERS AND PUMPING STATIONS
CONTRACTS 64 to 69, INCLUSIVE

Sealed bids or proposals for Contracts 64 to 69, inclusive, for constructing sewers and force mains, Contract 64; for constructing substructure and superstructure of pumping stations and ejector station, Contract 65; for furnishing and installing pumping and ejector equipment, and appurtenances, Contract 66; for electrical work, Contract 67; for plumbing, Contract 68; and for ventilating work, Contract 69, will be received at the office of the Allegheny County Sanitary Authority, 701 Civic Building, 200 Ross Street, Pittsburgh 19, Pa. until 2.00 P.M.. Eastern Standard time on Tuesday, December 6, 1955. Immediately thereafter they will be taken to Room 410 in the Court House, Grant Street and Fifth Avenue, Pittsburgh, Pa. and then publicly opened and read.

Contract 64—Intercepting sewers for the Verona Project including a subaqueous river crossing, open cut sewers, force mains, and all appurtenances and repairs to existing sewers.

Contract 65 includes substructures and superstructures for Verona and Squaw Run Pumping Stations and Montrose Ejector Station.

Contract 66 includes pumping and ejector equipment and appurtenances at Verona and Squaw Run Pumping Stations and Montrose Ejector Station.

Contract 67 includes electric work at Verona and Squaw Run Pumping Stations and Montrose Ejector Station.

Contract 68 includes plumbing at Verona and Squaw Run Pumping Stations and Montrose Ejector Station.

Contract 69 includes ventilation at Verona and Squaw Run Pumping Stations and Montrose Ejector Station.

Drawings and contract documents may be examined and obtained at the office of the Authority, 701 Civic Building, 200 Ross Street, Pittsburgh 19, Pa. A deposit of fifty dollars ($50) will be required for one set of drawings and contract documents including all contracts, which will be refunded on receipt of a bona fide bid and return of the drawings and specifications in good order within sixty (60) days. Only twenty-five ($25) dollars will be refunded to those who return the drawings and specifications in good order within sixty (60) days after the bidding date, but do not submit a formal bid.

Bid security shall be furnished by certified check or bid bond for ten (10) percent of the bid price. The successful bidder must furnish a Performance Bond and a Labor and Materialmen's Bond, each for 100 percent of the contract price.

The right is reserved to reject any or all bids.

ALLEGHENY COUNTY
SANITARY AUTHORITY
Edmund S. Ruffin, Jr., Chairman

Bids: December 6, 1955

Allegheny County Sanitary Authority Intercepting Sewers and Sewage Treatment Plant

CONTRACTS 29 AND 48

Sealed bids or proposals for Contracts 29 and 48, for constructing portions of an intercepting sewer, in an open trench, with connections and other appurtenances will be received at the office of the Allegheny County Sanitary Authority, 701 Civic Building, 200 Ross Street, Pittsburgh 19, Pa. until 2:00 P.M. Eastern Standard Time on Tuesday, December 6, 1955. Immediately thereafter they will be taken to Room 410 in the Court House, Grant Street and Fifth Avenue, Pittsburgh, Pa. and then publicly opened and read.

Contract 29 includes approximately one mile of intercepting sewer varying from 14" to 24" inside diameter.

Contract 48 includes approximately two miles of intercepting sewer varying from 12" to 30" inside diameter.

Drawings and contract documents may be examined and obtained at the office of the Authority, 701 Civic Building, 200 Ross Street, Pittsburgh, Pa. A deposit of one hundred dollars ($100) will be required for one set of drawings and contract documents on each contract, which will be refunded on receipt of a bona fide bid and return of the drawings and specifications in good order within sixty (60) days. Only fifty dollars ($50) will be refunded to those who return the drawings and specifications in good order within sixty (60) days after the bidding date, but do not submit a formal bid.

Bid security shall be furnished by certified check or bid bond for ten (10) percent of the bid price. The successful bidder must furnish a Performance Bond and a Labor and Materialmen's Bond, each for 100 percent of the contract price.

The right is reserved to reject any or all bids.

ALLEGHENY COUNTY
SANITARY AUTHORITY
Edmund S. Ruffin, Jr., Chairman

SEARCHLIGHT SECTION

OFFICIAL PROPOSALS

Bids: December 20, 1955

Allegheny County Sanitary Authority Intercepting Sewers

CONTRACTS 30 to 33, Inclusive, and 53 to 55, Inclusive

Sealed bids or proposals for Contracts 30 to 33, inclusive, and 53 to 55, inclusive, for constructing portions of an intercepting sewer, in both tunnel and open cut trench, with connections and other appurtenances will be received at the office of the Allegheny County Sanitary Authority, 701 Civic Building, 200 Ross Street, Pittsburgh 19, Pa. until 2:00 P.M. Eastern Standard time on December 20, 1955. Immediately thereafter they will be taken to Room 410 in the Court House, Grant Street and Fifth Avenue, Pittsburgh, Pa. and then publicly opened and read.

Contract 30 includes approximately two miles of intercepting sewer varying from 36" to 45" inside diameter.

Contract 31 includes approximately one mile of intercepting sewer varying from 21" to 54" inside diameter.

Contract 32 includes approximately four miles of intercepting sewer varying from 36" to 45" inside diameter.

Contract 33 includes approximately six miles of intercepting sewer varying from 24" to 42" inside diameter.

Contract 53 includes approximately two miles of intercepting sewer of 54" inside diameter.

Contract 54 includes approximately two miles of intercepting sewer varying from 36" to 54" inside diameter.

Contract 55 includes approximately five miles of intercepting sewer varying from 8" to 36" inside diameter .

Drawings and contract documents may be examined and obtained at the office of the Authority, 701 Civic Building, 200 Ross Street, Pittsburgh, Pa. A deposit of one hundred ($100) will be required for one set of drawings and contract documents on each contract, which will be refunded on receipt of a bona fide bid and return of the drawings and specifications in good order within sixty (60) days. Only fifty ($50) will be refunded to those who return the drawings and specifications in good order within sixty (60) days after the bidding date, but do not submit a formal bid.

Bid security shall be furnished by certified check or bid bond for ten (10) percent of the bid price. The successful bidder must furnish a Performance Bond and a Labor and Materialmen's Bond, each for 100 percent of the contract price.

The right is reserved to reject any or all bids.

ALLEGHENY COUNTY
SANITARY AUTHORITY
Edmund S. Ruffin, Jr., Chairman

Bids: November 29, 1955

Fairfax County, Virginia Integrated Sewerage System

CONSTRUCTION OF A SEWAGE TREATMENT PLANT

Sealed bids will be received at the Office of the Sanitary Engineer, County of Fairfax, Fairfax, Virginia, until Tuesday, November 29, 1955, at 2:00 P.M., E.S.T. for the construction of:

Contract No. 45: A secondary sewage treatment plant and Pumping Station with an initial capacity of 0.75 M.G.D. Copies of the plans and specifications may be examined without charge at: Alexander Potter Associates, New York; Massey Engineers, Fairfax, Va.; Associated General Contractors, Charlotte, Greensboro and Raleigh, N. C. and Columbia, S. C.; Builders Exchange, Inc., Richmond, Va.; Builders & Contractors Exchange, Norfolk, Va. Plans and contract documents may be examined and copies thereof obtained at the Office of the Sanitary Engineer, upon payment of $20.00 per set, which shall not be returnable. Contractors, whether resident or non-resident in Virginia, will be required to show evidence of a Certificate of Registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered. Each bid must be accompanied by cash, certified check, or by an acceptable bidder's bond in an amount not less than 5% of the amount of the total bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

OFFICIAL PROPOSALS

No bid may be withdrawn for a period of 30 days after the opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

Harry L. Hale
Sanitary Engineer

Dated: October 20, 1955

Bids: December 13, 1955

Allegheny County Sanitary Authority Intercepting Sewers

CONTRACTS 28, 45, 50, 51 and 52

Sealed bids or proposals for Contracts 28, 45, 50, 51 and 52, for constructing portions of an intercepting sewer, generally in rock tunnel, with connections and other appurtenances will be received at the office of the Allegheny County Sanitary Authority, 701 Civic Building, 200 Ross Street, Pittsburgh 19, Pa. until 2:00 P.M. Eastern Standard Time on December 13, 1955. Immediately thereafter they will be taken to Room 410 in the Court House, Grant Street and Fifth Avenue, Pittsburgh, Pa. and then publicly opened and read.

Contract 28 includes approximately two miles of intercepting sewer varying from 16" to 54" inside diameter.

Contract 45 includes approximately three miles of intercepting sewer varying from 15" to 42" inside diameter.

Contract 50 includes approximately six miles of intercepting sewer varying from 18" to 90" inside diameter.

Contract 51 includes approximately four miles of intercepting sewer varying from 8" to 48" inside diameter.

Contract 52 includes approximately four miles of intercepting sewer varying from 18" to 60" inside diameter.

Drawings and contract documents may be examined and obtained at the office of the Authority, 701 Civic Building, 200 Ross Street, Pittsburgh, Pa. A deposit of one hundred dollars ($100) will be required for one set of drawings and contract documents on each contract, which will be refunded on receipt of a bona fide bid and return of the drawings and specifications in good order within sixty (60) days. Only fifty dollars ($50) will be refunded to those who return the drawings and specifications in good order within sixty (60) days after the bidding date, but do not submit a formal bid.

Bid security shall be furnished by certified check or bid bond for ten (10) percent of the bid price. The successful bidder must furnish a Performance Bond and a Labor and Materialmen's Bond, each for 100 percent of the contract price.

The right is reserved to reject any or all bids.

ALLEGHENY COUNTY
SANITARY AUTHORITY
Edmund S. Ruffin, Jr., Chairman

Bids: November 10, 1955

The Port of New York Authority

5,000 WOODEN WING SHIP PALLETS
PORT NEWARK, NEW JERSEY
PROPOSAL NO. 694

Sealed proposals for the supplying of 5,000 wooden wing ship pallets for Port Newark, New Jersey, will be received at the office of the Director of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, until 11:00 A.M. (E.S.T.), Thursday, November 10, 1955, at which time and place bids will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase and Administrative Services.

THE PORT OF NEW YORK AUTHORITY
Donald G. Lowe, Chairman

Bids: November 14, 1955

Fairfax County, Virginia Integrated Sewerage System

Sealed bids will be received at the Office of the Sanitary Engineer, County of Fairfax, Fairfax, Virginia, until Monday, November 14, 1955, at 2:00 P.M., E.S.T. for the construction of Contract No. 37A: Approximately 4800 lin. ft. of 30 to 42-inch sanitary sewers and appurtenances.

Plans and contract documents may be examined and copies thereof obtained at the Office of the Sanitary Engineer, upon payment of $10.00 per set, which shall not be returnable.

Contractors, whether residents or non-residents in Virginia, will be required to show evidence of a Certificate of Registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered.

Each bid must be accompanied by cash, certified check, or by an acceptable bidder's bond in an amount not less than 5% of the amount of the total bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

No bid may be withdrawn for a period of 30 days after the opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

Harry L. Hale
Sanitary Engineer

Dated: October 19, 1955

Bids: November 15, 1955

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF TOWERS, GUIDES & SILLS
FOR
BARNHART ISLAND POWER PLANT, LONG SAULT DAM AND MASSENA INTAKE
SPECIFICATIONS NO. PA-5-15056

ST. LAWRENCE CONTRACT NO. P19

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the manufacture, and furnishing of Towers, Guides and Sills for Barnhart Island Power Plant, Long Sault Dam and the Massena Intake and delivery thereof f.o.b. destination in the following ways:

(1) If delivered in person on the day of receiving bids until 10:30 A.M., Eastern Standard Time on the 15th day of November 1955, Hearing Room C on the 6th Floor, 270 Broadway, New York 7, N. Y.

(2) If mailed in until 10:15 A.M., Eastern Standard Time on the 15th day of November, 1955, at the Authority's office, 270 Broadway, Room 1300, New York 7, N. Y.

The proposal will be publicly opened and read aloud at the time and at the address given in (1) above.

The work involves the fabrication of approximately 4500 tons of structural steel and rails. Bids will be entertained for all the metal work in accordance with the biding schedule. Erection at the site of installation will be done by Others.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineers, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, N. Y., upon application and prepayment of a fee of Twenty Dollars ($20.00) per initial set of contract documents and Ten Dollars ($10.00) per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 per cent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-15056
10/21/55

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4542) will be received at Spanish Fork, Utah, until November 15, 1955, for furnishing labor and materials for Deer Creek Power Plant and Switchyard, Provo River Project, Utah. Location near Provo, Utah. Principal items are 772 cu. yds. concrete; constructing 7,500 sq. ft. of 8-inch concrete masonry unit walls; installing two 3,500-hp hydraulic turbines and governors; installing two 2,750-kva generators; furnishing and erecting 110,000 lbs. structural steel for power plant; and other work. Completion time 650 days. For particulars, address Bureau of Reclamation, P. O. Box 71, Spanish Fork, Utah, or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

Positions Vacant
Positions Wanted
Part Time Work

Civil Service Opportunities....
Selling Opportunities Wanted
Selling Opportunities Offered

Employment Agencies
Employment Services
Labor Bureaus

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The advertising rate is $24.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

$1.80 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Box Numbers—counts as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS to ENGINEERING NEWS-RECORD, 330 W. 42nd St., N. Y. 36, N. Y. for November 10th issue closing October 31st

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Structural Steel detailers and checkers—permanent employment offered to qualified men. Please send experience record and salary required to Pittsburgh Des Moines Steel Company, Santa Clara, California.

Assistant Engineer, civil engineering background. Training and experience in one or more of the following: design of subdivisions; sewer and water; streets. This is a career position in a consulting engineer's office. Applicant must be available immediately. Salary to $8000. State experience, education and give references. Lester V. Johnson Associates 2309 Wilson Boulevard Arlington 1, Virginia.

Civil Engineer, research and development—experienced in asphalt pavement construction and with ability to prepare construction specifications and technical manuals. Pleasant living conditions with special employment benefits. Location East Coast. State salary expected. P-7887, Engineering News-Record.

Wanted—Estimator-Engineer for building construction work in Texas. An experienced estimator for building construction work qualified to estimate and price all phases of building construction. Projects would vary in size from $100,000 to $1,000,000. Please give training, experience, and references from contractors in this field. P-7933, Engineering News-Record.

Engineer to design and write up specifications for fishways, hatcheries, counting weirs, and other engineering projects and to supervise construction of same. For application forms and further details, write to Alaska Department of Fisheries, 229 Alaska Office Building, Juneau, Alaska.

Draftsmen, experienced structural steel detailers on ally types of buildings and conveyor work. Long range program, good working conditions in a consulting engineer's office, paid holidays and vacation plan. Send complete information to: Samborn, Steketee & Associates, 1214 Cherry Street, Toledo 4, Ohio.

Wanted. Sanitary or Civil Engineers as resident engineers on large sewage project involving sewage treatment plant, pumping stations, and 63½ miles of intercepting sewers including 30 miles in tunnel. Program calls for 3-year construction period. Must be experienced. Give full particulars and salary first letter. Allegheny County Sanitary Authority, 701 Civic Building, Pittsburgh 19, Pennsylvania.

Associate City Engineer—for general municipal work. Experience in operation or construction of Sewage and Water Works desirable. Send complete record of education, experience, references, personal data, salary desired and date available to City Engineer, Mankato, Minnesota.

Quarry Superintendent, capable of setting up and running complete operation, location—New England. P-7921, Engineering News-Record.

Field Office Manager, highway construction, handle payroll, cost, equipment records, etc. Present location, New England, permanent status for right man. P-7918, Engineering News-Record.

Wanted recent civil or mechanical engineering graduates, general field municipal water supply. Annual increase in salary and bonus. Profit sharing plan. Pitometer Associates, Engineers, 50 Church Street, New York City.

DESIGNERS
DRAFTSMEN

STRUCTURAL
MECHANICAL
ELECTRICAL

Openings in field of Industrial and Power Plant Design

JACKSON & MORELAND
ENGINEERS
600 Park Square Bldg.
Boston 16, Mass.

BRIDGE ENGINEERS

Civil Graduates of accredited U. S. colleges. Must have not less than the following experience:
Detailers—2 years structural steel or reinforced concrete detailing.
Designers—4 years responsible work on structural steel and concrete including work on long span bridges.
Mail complete resume together with salary required to:

Howard, Needles, Tammen & Bergendoff
55 Liberty Street New York 5, N. Y.

MECHANICAL ENGINEER
Design and Install New Projects

If you are a graduate mechanical engineer and have approx. 10 years experience in a process industry—food, chemical, oil, rubber—investigate this opening in the largest plant of one of the largest food companies in the nation. Prefer under 38 years of age. Salary around $10,000 depending upon experience. Please submit detailed resume.

P-8099, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

Your inquiry will have Special value . . .

If you mention this magazine, when writing advertisers. Naturally the publisher will appreciate it . . . but, more important, it will identify you as one of the men the advertiser wants to reach with this message . . . and help to make possible enlarged future service to you as a reader.

STRUCTURAL ENGINEER

Graduate civil engineer interested in structural design engineering. Experience not required. Excellent opportunity with consulting engineering firm. Liberal benefit plans and good working conditions. Location Middle West.
Send resume of education and experience with salary requirements to:

P8080 Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS VACANT

Instructor or Assistant Professor of Civil Engineering. Teaching experience desirable but not necessary. B.S. or M.S. in Civil Engineering req'd. Salary and academic rank commensurate with degree and experience. Contact Civil Engineering Department, University of Denver, Denver 10, Colorado.

Graduate Civil Engineers or Architectural Engineers not over 27 and single, or if married, willing to move. Must have military training completed and interested in learning the building construction business, starting in the field. We offer opportunity for rapid advancement to ambitious, hard-working young men willing to accept responsibility. Starting salary $92.50 per week if unexperienced with higher rates for those with some experience. Not unusual for our engineers to increase their salary 20% to 25% first year. Send complete history data. Martin K. Eby Construction Co., Inc., 610 N. Main, Wichita 5, Kansas.

A Superintendent of Construction and Operations in the Water Department is needed by the City of Fresno, California, for a permanent Civil Service position. Must have at least five years of supervision in the construction operation, and maintenance of a water distribution system. $600.00 per month. For further information contact the Civil Service Board, Room 203, City Hall, Fresno, California. Applications must be filed before 5 P.M., November 15, 1955.

Wanted: Estimator and take-off man—must be experienced. Enclose resume of experience and qualifications when applying and salary expected. P.O. Box 326, Cumberland, Maryland.

City Engineer—City of Yuba City, California (pop. 10,294) invites applications from California-registered civil engineers for examinations to be given by the California State Personnel Board. Appointee will be responsible for design, processing and inspection of all municipal projects. Salary open. Closing date—November 12, 1955. Request application forms and complete information from F. K. Dawson, City Administrator, City Hall, Yuba City, California.

Civil Engineer: The Engineering Department of the City of Fort Lauderdale, Florida has a vacancy for a graduate civil engineer. The duties are varied, covering all phases of office and field work. The salary range is $364-460 monthly. Starting salary will depend on the qualifications of the individual. Applications may be obtained by writing to the Civil Service Department, City Hall, Fort Lauderdale, Florida.

Wanted shaft and tunnel Sup't. Exp. in estimating and shaft and tunnel design. P-8086, Engineering News-Record.

Superintendent or Ass't. Supt. capable of running in the field a variety of medium sized heavy construction jobs. Give detailed outline and salary requirements. P-8043, Engineering News-Record.

Estimator—Permanent position with progressive heavy and highway contractor located in Central Ohio. Our employees know of this inquiry. P-8057, Engineering News-Record.

(Continued on following page)

EMPLOYMENT OPPORTUNITIES

DESIGN ENGINEERS

PERMANENT OPENINGS FOR QUALIFIED ENGINEERS EXPERIENCED IN DESIGN OF:

STRUCTURAL STEEL
REINFORCED CONCRETE

APPLICABLE TO DESIGN OF BRIDGES, BUILDINGS, TEST FACILITIES, AND GENERAL INDUSTRIAL STRUCTURES.

also

PIPING DESIGN & LAYOUT
HEATING & VENTILATING
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APPLICABLE TO DESIGN OF INDUSTRIAL FACILITIES, TEST FACILITIES, POWER PLANTS AND ELECTRICAL INSTALLATIONS.

OPENINGS ALSO AVAILABLE FOR DRAFTSMEN, DETAILERS AND SEVERAL RECENT GRADUATES.

We desire engineers who want long range employment with ample opportunity for professional development and advancement. Employee Benefits Plan plus other attractive features.

Please write fully to

SVERDRUP & PARCEL, INC.
Consulting Engineers
915 Olive Street St. Louis 1, Mo.

CONSTRUCTION ENGINEERS

(Foreign Employment)

Graduate Electrical, Mechanical, Civil and Chemical Engineers with minimum 7 years experience supervising construction of industrial buildings, housing, oil refineries, pipelines and related oil processing and oil handling facilities. Engineering degree essential.

For work in Saudi Arabia with major oil company. Salaries commensurate with training and experience.

Write giving full particulars regarding personal history and work experience.

Recruiting Supervisor, Box 78
ARABIAN AMERICAN OIL COMPANY
505 Park Avenue New York 22, N. Y.

WANTED
Experienced Superintendent

In Filter Plant, heavy earth & Rock excavation. Exceptionally large forming job. Send resume of experience and reference.

P-8058, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CONSTRUCTION SUPERINTENDENT

Excellent opportunity with one of the world's largest Engineering and Construction companies, serving the Petroleum and Chemical Industries.

Must have experience in heavy reinforced-concrete construction and construction of large-scale waterfront installations, such as water-pumping station, docks, piers, and deep cofferdams, and other work involving bearing piling, sheet piling, and well-point systems.

Please send a complete resume of your experience along with a recent photograph of yourself.

P-8093, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED:

One Piping Estimator
One General Construction Estimator

Apply to Kaminer Construction Corporation, P. O. Box 227, Chamblee, Georgia. Need piping estimator capable of complete takeoff and handling of jobs involving paper mill, chemical plant, power plant and general industrial piping. Also general construction estimator to handle industrial buildings, as well as all types general construction occurring in above types of work. We are moving our headquarters from Greenville, South Carolina to greater Atlanta. Salaries open.

STRUCTURAL ENGINEERS
BRIDGE DESIGNERS

Excellent opportunity for Structural Engineers experienced in design of structural steel or reinforced concrete, who desire to work with an established organization on large, long-term expressway programs. Recent graduates and detail draftsmen accepted. Pleasant living conditions in Harrisburg, Pennsylvania. Insurance, pension and bonus plans reward service.

Send complete outline of experience, date available and salary desired in first letter to:

GANNETT FLEMING CORDDRY & CARPENTER, INC.
Box 366, Harrisburg, Pa.

ENGINEERS - DESIGNERS - DRAFTSMEN
for work on
BRIDGES AND EXPRESSWAYS

Opportunity for continuous employment in our Cincinnati, Louisville & Chicago offices for graduates or engineers with practical backgrounds. Overtime allowance, paid vacations and holidays, insurance and retirement plan.

Please give detailed personal and experience record, three competent references and salary expected in first letter.

Hazelet & Erdal, Consulting Engineers
Dixie Terminal Bldg.
Cincinnati 2, Ohio

POSITIONS VACANT
(Continued from preceding page)

Works Manager—For a light metal manufacturing operation with 1800 employees. Mid-West Company. Must have mechanical skills—an M.E. degree preferred. Record of good planning and management a requisite. Send resume and salary expectations to P-8075, Engineering News-Record.

POSITIONS WANTED

Senior Structural Engineer registered in several states with connections to State Highway and Bridge Departments wishes partnership with established engineering firm. PW-7886, Engineering News-Record.

Materials Engineer thoroughly familiar with sampling, testing and design for soils, asphalt and concrete desires employment foreign and domestic, particularly paving. 8 years concentrated experience, single, age 31, geology major, "Q" cleared. PW-8020, Engineering News-Record.

Available for assignment domestic overseas as field coordinating, material engineer project supervisor general superintendent industrial, plant or air base construction. PW-8003, Engineering News-Record.

Controller—20 years broad experience—top administrator all financial and accounting functions—last 12 years engineering and construction. Resume on request. PW-7922, Engineering News-Record.

Civil-Structural Engineer, seasoned with excellent diversified domestic and foreign experience, knowing languages, wishes foreign position of responsibility and trust. PW-7889, Engineering News-Record.

Controller seeking post with responsibility for administration, budget, financial control, planning, economic analyses, preparation and control of engineering or construction costs, progress schedules and reports. Engineering and accounting experience. Mature. PW-8079, Engineering News-Record.

Civil Engineer—Municipal experience, capable supervision of draftsmen, surveyors, engineers, preparing plans, estimates on sewers, drains, streets, seeks responsible position with municipality, consultant or contractor. Degrees, PE license, young. PW-8081, Engineering News-Record.

Mechanical Engineer, 58 years old, now employed on construction project nearing completion, seeks position of responsibility with engineer, contractor or manufacturer in charge of construction, design or maintenance. Well qualified for all. Good organizer, able administrator. Prefer industrial north-east. $10,000.-$15,000. PW-8038, Engineering News-Record.

Estimator—Civil Engineer. 30 years of age thoroughly experienced in office, field and design, desires responsible position with future. PW-8089, Engineering News-Record.

Civil-Structural Engineer, reg. in several states, over 25 years of first class experience desires permanent position of responsibility in bridges and buildings. PW-7892, Engineering News-Record.

Construction Engineer, age 51, 25 yrs. experience, presently employed as chief engineer and head estimator for nationally known heavy construction firm. Familiar with joint venture procedures and all phases of construction. Permanent position desired in any part of country. References from present employer and associated joint venture companies. PW-7984, Engineering News-Record.

Operating Engineer, Dozers foreman—dozers scrapers permanent. Own house trailer. PW-8098, Engineering News-Record.

Mechanical Engineer 25 years broad experience design of steam-electric power, iron and steel, chemical and other heavy industrial process plants. Fully capable supervising design of complete plants; specifications, estimates, and economic reports. Specialist in high pressure and temperature piping design. PW-8084, Engineering News-Record.

PART TIME WORK WANTED

Registered Structural engineer well qualified in industrial building design, Illinois and Indiana area (Chicago vicinity). PTWW-8040, Engineering News-Record.

SELLING OPPORTUNITY WANTED

Construction Engineer desires sales agency for construction equipment (Philadelphia Territory). SA-8097, Engineering News-Record.

STRUCTURAL and MECHANICAL ENGINEERS

Having experience with heavy material handling equipment

Permanent Position For Qualified Men

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Phone or Write
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Write giving full particulars concerning education, experience, personal history and availability to:

Richard L. Shaw
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Consulting Engineers
Baker Building Rochester, Penna.

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AT OUR

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Excellent Opportunities for
. . . . LAYOUT ENGINEERS
Experienced in BLAST FURNACE and sintering Plant layout.

Applicants should have at least 5 years of good design experience in any of the above fields, applicable to heavy construction as described below—

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Please Send Resume To:

Edward A. Kolner

ARTHUR G. McKEE & CO.

2300 Chester Avenue
CLEVELAND, 1, OHIO

HIGHWAY ENGINEER

Registered Civil Engineer specialized in Highway and Turnpike design. Will head a newly formed Highway Engineering subsidiary of a well-established eastern engineering and construction firm.

Send complete resume of experience and names and addresses of three references. Salary open.

P-8021, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

ENGINEERING OPPORTUNITIES

For young graduate Civil Engineers interested in future as highway design engineers. Training under competent highway specialists in expanding well-established firm.

Permanent positions now available. Some highway experience preferred but not required.

Excellent starting salaries, moving allowance, Blue Cross, paid vacations and holidays; sick leave, and voluntary employee benefit and retirement plan.

Write for application form.

SVERDRUP & PARCEL ENGINEERING CO.
1134 Locust St. *St. Louis 1, Mo.*

OVERSEAS EMPLOYMENT

GUAM PROJECT

PRINCIPAL ENGINEER

Graduate Engineer with at least 8 years' experience in design of structures, utilities and roads. Civil Engineer preferred.

Write, giving detailed account of experience, education, etc.

BROWN-PACIFIC-MAXON
"Guam" Contract NOy-13931
P. O. Box 3316, Rincon Annex
San Francisco "19"—Calif.

AIRPORT MASTER PLANNER

Eastern Architect-Engineer firm has permanent staff position open for registered Architect or Civil Engineer with extensive experience in Master Planning of complete Airports.

Send resume of experience as well as references. Salary open.

P-8024, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

Civil Engineers

To do engineering work for the City of Milwaukee on an annual $20,000,000 construction program in connection with the design and construction of sewers, water distribution system, street paving work, bridges and viaducts or to do surveying and general field engineering work. Will receive fundamental experience in approved engineering and construction methods. Opportunities for advancement. Good working conditions. Opportunity to work for Master's degree in engineering.

Beginning salary: Engineering Graduate $4580
Engineering graduate with 2 years of experience $4775: Possessor of Master's degree in engineering $4970

Write Ovid B. Blix, City Personnel Director, stating education and experience and for additional information.

City Hall Milwaukee, Wisconsin

WANTED: ASS'T TRAFFIC ENGR.

For traffic engineering department just recently established. Salary range $554 to $670 a month with maximum salary obtainable through annual and longevity increases. Registration as a professional engineer required. Applications accepted until the needs of the service are filled. Write Personnel Department, City Hall, Madison 3, Wis.

Architectural Designers Mechanical, Electrical, Structural Engineers & Draftsmen

Varied and interesting work in a progressive consulting office. Long range program, good working conditions and employee benefits.

Must be experienced. Good opportunities based on qualifications.

Send complete resume of experience.

Samborn, Steketee & Associates
1214 Cherry Street
Toledo 4, Ohio

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BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED RATE:

The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW ADVERTISEMENTS to N. Y. Office, 330 W. 42nd St., N. Y. 36, N. Y. for November 10th issue closing Oct 31st

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

BUSINESS OPPORTUNITIES

Established Penna. Contractor seeks a contractor or investor for the production of sand & gravel in a non-competitive Pa. area where $250,000 in profits can be realized annually. These materials have been tested and meet state specifications. BO-8096, Engineering News-Record.

For Sale—Established Engineering Co. in Rockford, Ill. Reputation for quality work in utility gas mains and steam main construction, power house piping and propane plant construction. Write Mrs. Kay M. Laswell—Byron, Ill.

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.

Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
P.O. Box 921 Lake Worth, Florida

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ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year. Write today without obligation.

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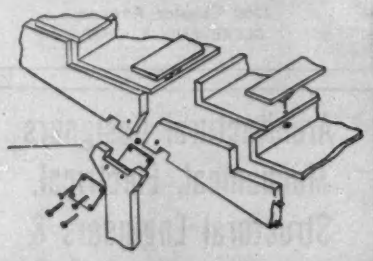

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EDITORIALS

More Floods

BY THE LAW OF PROBABILITY, much of the northeastern part of this country could expect to be free of serious floods for a long time. It had had what hydrologists would classify as the 100-year flood in late August. Possibly some areas had received the 1,000-year flood. But nature is no respecter of man-made laws. Another flood of abnormal size struck the region again in mid-October. Rainfall in some areas exceeded that of the August storm.

This improbable happening may not be without a favorable aspect. As nothing else could have done, it has stressed the urgency of fast action on flood-control measures if like damage is to be prevented in the years immediately ahead. The President has promised to recommend more flood control work for New England, and Congress should come forward with the funds.

Who Owns a Model Code?

THE CONSTRUCTION INDUSTRY owes a great debt to building officials for the development of model building codes, which are a potent force in upgrading of local codes. Recently, however, other segments of the industry have become more and more unhappy because the mechanism for model-code revision remains completely under the control of building officials. The most recent instance is a disagreement between fabricators and the Pacific Coast Building Officials Conference.

It arose because greatly increased use of factory-assembled components in building construction is giving building officials cause for concern. They find that much prefabrication is done outside their jurisdictions where they cannot inspect the work, also that it would be too costly to test a sufficient number of these assemblies to insure safe construction.

To solve this problem, PCBOC at its annual meeting sanctioned a controversial revision of its Uniform Building Code, a model code in widespread use throughout the country. The new regulation requires the local building official to inspect fabricating shops and to issue a certificate of approval to those meeting desired standards. In practice, however, each building official need not carry out his own inspection but may, if he wishes, approve those shops already inspected and certified by PCBOC (for a fee).

Construction industry representatives called attention to several objectionable features of the plan: 1. A single annual inspection by PCBOC is no guarantee that the quality of the product will continue uniformly high. 2. PCBOC is putting itself in the position of being investigator, principal witness and then, the judge and jury of the case before it. (If approval is refused or revoked, to what higher authority can a fabricator appeal?) 3. Fees other than the actual costs of necessary inspection and testing are undesirable, because they add to production costs.

Industry opposition to the approval scheme was further stiffened when PCBOC passed the revision by a vote of building officials only, without successfully overcoming these objections. Yet, it is difficult to visualize how the scheme can succeed without industry cooperation.

This and other disagreements between building officials and the rest of the construction industry raise the thought-provoking question: Is a model building code in widespread use the sole property of the building officials who promulgated it, to be modified and interpreted as they see fit? Or is it a public document, to be changed by democratic procedures and only with the consent and under the direction of a body in which all interests are represented?

Waterways Should be Self-Supporting

THE IMPOSITION OF TOLLS on inland waterways was opposed by the Ohio Valley Improvement Association in a resolution adopted at its recent meeting in Cincinnati. Charging such tolls was recommended by the Hoover Commission.

Significantly, at the same time, the association went on record as favoring the program of the Corps of Engineers for replacement of the old navigation locks and dams on the Ohio River to modernize that waterway. This work will, of course, add very materially to the already large investment the federal government has made to foster navigation along that stream, and without any direct return.

Years ago, when work on the present 9-ft navigation channel was begun, a reasonable argument could be made for its toll-free use as a means for stimulating a sufficient volume of barge traffic to bring down unit costs to the point where industries along the river would find use of the waterway profitable. But that day is long past. A large volume of traffic has been developed and should be able to pay its own way.

If most of this traffic exists only because of the subsidy from toll-free use, which seems improbable, then the whole theory that inland waterways provide this nation with a cheap form of mass transportation falls flat. What appears more probable is that most of the users of that waterway—many of which are large corporations—could pay an equitable toll and still move their products at less cost than by rail or truck.

Fortunately, Congress, in approving the application of tolls on the new St. Lawrence ship canal, set a precedent for the application of tolls on other waterways. The Ohio would be a good place to begin extending the collection of tolls to other canalized rivers. Many of its navigation facilities need replacement. When Congress is asked to provide more money for that work, it should predicate its approval on the payment of reasonable tolls by the users.

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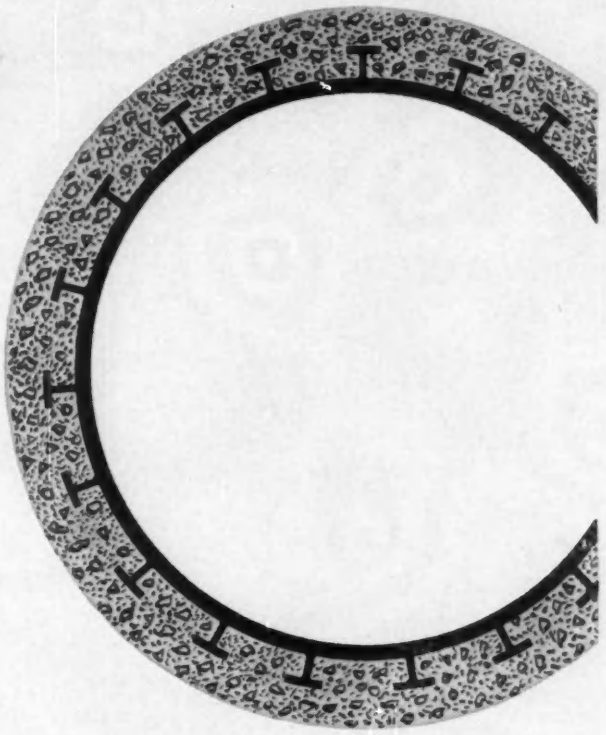

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